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FEDERAL - STATE - PRIVATE
COOPERATIVE

**SNOW SURVEY and WATER SUPPLY FORECASTS
for
OREGON**

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE

and

OREGON AGRICULTURAL EXPERIMENT STATION

and

STATE ENGINEER of OREGON

Data included in this report were obtained by the agencies named above
in cooperation with other Federal, State and private organizations.

AS OF
MAR. 1, 1960

UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY AND WATER SUPPLY FORECAST REPORTS:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Fortunately, most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from fore-knowledge of the runoff.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, about 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

By relating snow survey measurements taken over a period of years to spring-summer runoff during the same period, relationships have been developed which make it possible to forecast seasonal runoff several months in advance of occurrence. In order to make a forecast, once a forecast relationship has been developed, the maximum snow water content at previously selected key snow courses is usually entered in the forecast relationship. More accurate forecasts are often obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast relationships.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions.

PUBLISHED BY SOIL CONSERVATION SERVICE

<u>REPORTS</u>	<u>ISSUED</u>	<u>LOCATION</u>	<u>COOPERATING WITH</u>
RIVER BASINS			
COLORADO AND STATE OF UTAH	MONTHLY (JAN.-MAY)	SALT LAKE CITY, UTAH	UTAH STATE ENGINEER AND OTHER AGENCIES
COLUMBIA AND STATES OF IDAHO AND ALASKA	MONTHLY (JAN.-MAY)	BOISE, IDAHO	IDAHO STATE RECLAMATION ENGINEER
UPPER MISSOURI AND STATE OF MONTANA	MONTHLY (FEB.-MAY)	BOZEMAN, MONTANA	MONT. AGR. EXP. STATION
WEST-WIDE	OCT. 1, APR. 1, MAY 1	PORTLAND, OREGON	ALL COOPERATORS
STATES			
ARIZONA	SEMI-MONTHLY (JAN. 15 - APR. 1)	PHOENIX, ARIZONA	SALT R. VALLEY WATER USERS ASSOCIATION ARIZ. AGR. EXP. STATION
COLORADO AND NEW MEXICO	MONTHLY (FEB.-MAY)	FORT COLLINS, COLORADO	COLO. AGR. EXP. STATION COLO. STATE ENGINEER N. MEX. STATE ENGINEER
NEVADA	MONTHLY (FEB.-APR.)	RENO, NEVADA	NEVADA DEPT. OF CONSERVATION AND NATURAL RESOURCES - DIVISION OF WATER RESOURCES
OREGON	MONTHLY (JAN.-MAY)	PORTLAND, OREGON	ORE. AGR. EXP. STATION OREGON STATE ENGINEER
WASHINGTON	MONTHLY (FEB.-MAY)	SPOKANE, WASHINGTON	WASH. STATE DEPT. OF CONSERVATION
WYOMING	MONTHLY (FEB.-JUNE)	CASPER, WYOMING	WYOMING STATE ENGINEER
Copies of these various reports may be secured from: Head, Water Supply Forecasting Section Soil Conservation Service 209 S. W. Fifth Ave., Portland 4, Oregon			

PUBLISHED BY OTHER AGENCIES

<u>REPORT</u>	<u>ISSUED</u>	<u>AGENCY</u>
BRITISH COLUMBIA	MONTHLY (FEB.-JUNE)	COMPTROLLER, WATER RIGHTS BR., DEPT. OF LANDS AND FORESTS, PARLIAMENT BLDG., VICTORIA, B.C., CANADA
CALIFORNIA	MONTHLY (FEB.-MAY)	CALIFORNIA DEPT. OF WATER RESOURCES, SACRAMENTO, CALIFORNIA

FEDERAL - STATE - PRIVATE
COOPERATIVE
SNOW SURVEY and WATER SUPPLY FORECASTS
for
OREGON

ISSUED

MARCH 8, 1960

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STATE ENGINEER
STATE OF OREGON

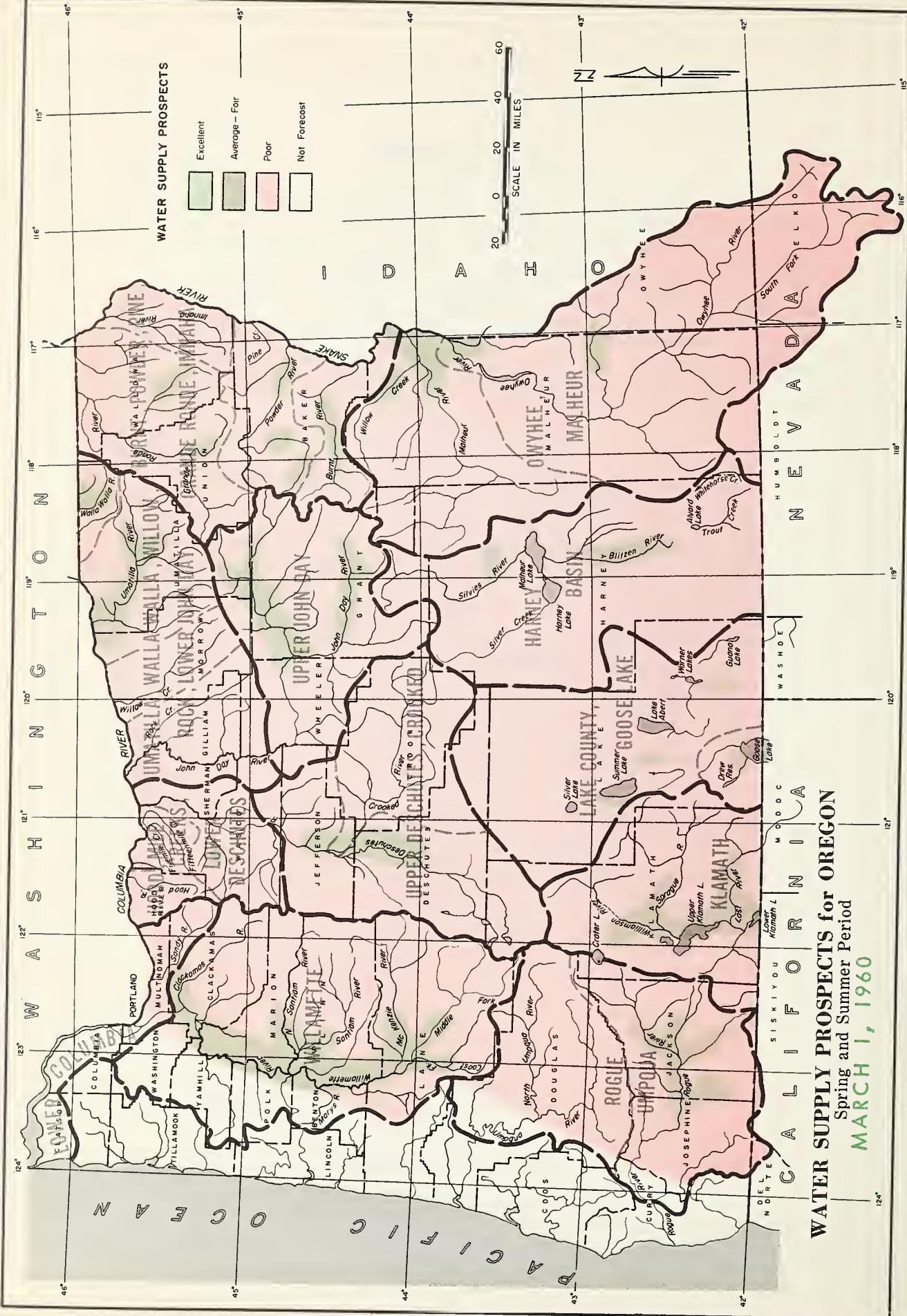
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WATER SUPPLY OUTLOOK for OREGON

MARCH 1, 1960

Oregon's water supply outlook for the spring and summer months of 1960 has improved somewhat during February but still varies from "low average conditions" to "poor". Conditions are improved over last year's "short" water situation except in the Hood River-Wasco and northeastern Oregon areas. Total stored water supplies are much below normal and watershed soils are still only partially "primed" under the poor snowpack.

SNOW COVER:

Water content of the mountain snowpack in Oregon averages about 70 percent of the March 1st normal. February brought a substantial increase in snow but not enough to wipe out the shortage.

In a normal winter about 85 percent of the total winter's snowpack should be on the ground by March 1. This year, however, snow accumulation to date is only 59 percent of a normal winter's total.

SOIL MOISTURE:

Watershed soils under the mountain snowpack in the northern third of the state are well "primed" by fall rains. Some additional state-wide soil priming has resulted from February rains. However, soils in the south half of the state are still very dry at the higher elevations under the snowpack and will soak up valuable snow-melt water.

PRECIPITATION:

February precipitation¹ in Oregon varied from 60 percent normal at Heppner to 218 percent at Klamath Falls. However, state-wide precipitation since October 1st averages only 63 percent normal.

RESERVOIR STORAGE:

Total water stored in twenty-five reservoirs over the state averages only 77 percent of normal for March 1st and 66 percent of that available last year at this date. Absence of "carry-over" storage because of the "short" water season last year is having a serious effect on this season's water outlook.

STREAMFLOW:

Flow of key Oregon streams² during the period October 1st to the end of February has been very low and varies from 45 percent of normal on the Umpqua to a high of 82 percent on the Deschutes.

Forecasts for streamflow for the irrigation season, April through September, have improved somewhat in most areas but are still below average. Forecasts vary from as low as 47 percent on the Silvies River to 90 percent on the Umatilla River.

Many small streams and tributaries will produce water in limited quantities and then only in the early season.

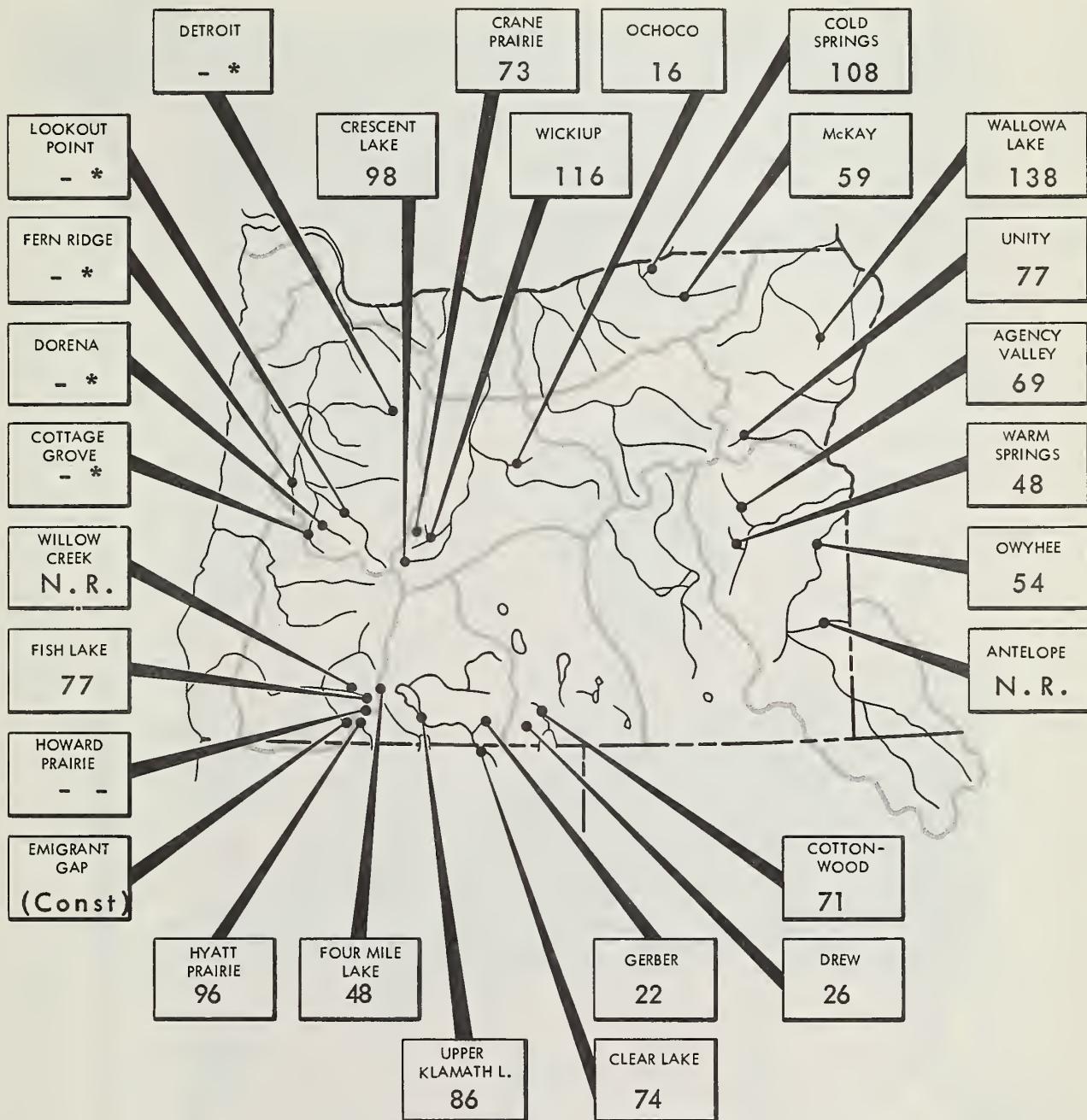
(1) From preliminary data furnished by U.S. Weather Bureau, Portland, Oregon.

(2) From preliminary data furnished by U.S. Geological Survey, Portland, Oregon.

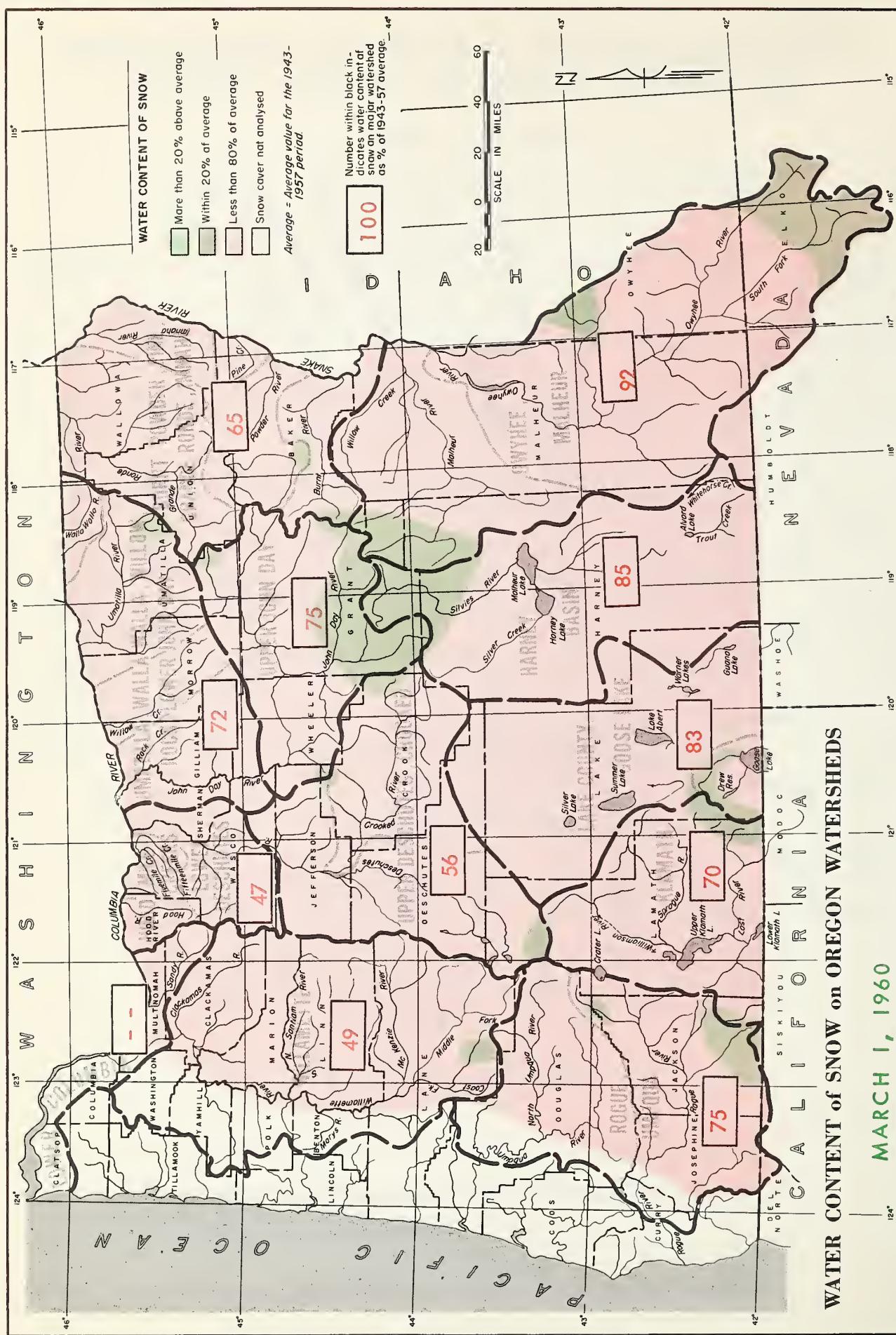
STORAGE STATUS of OREGON RESERVOIRS

as percent of 1943-57, 15 year average

MARCH 1, 1960

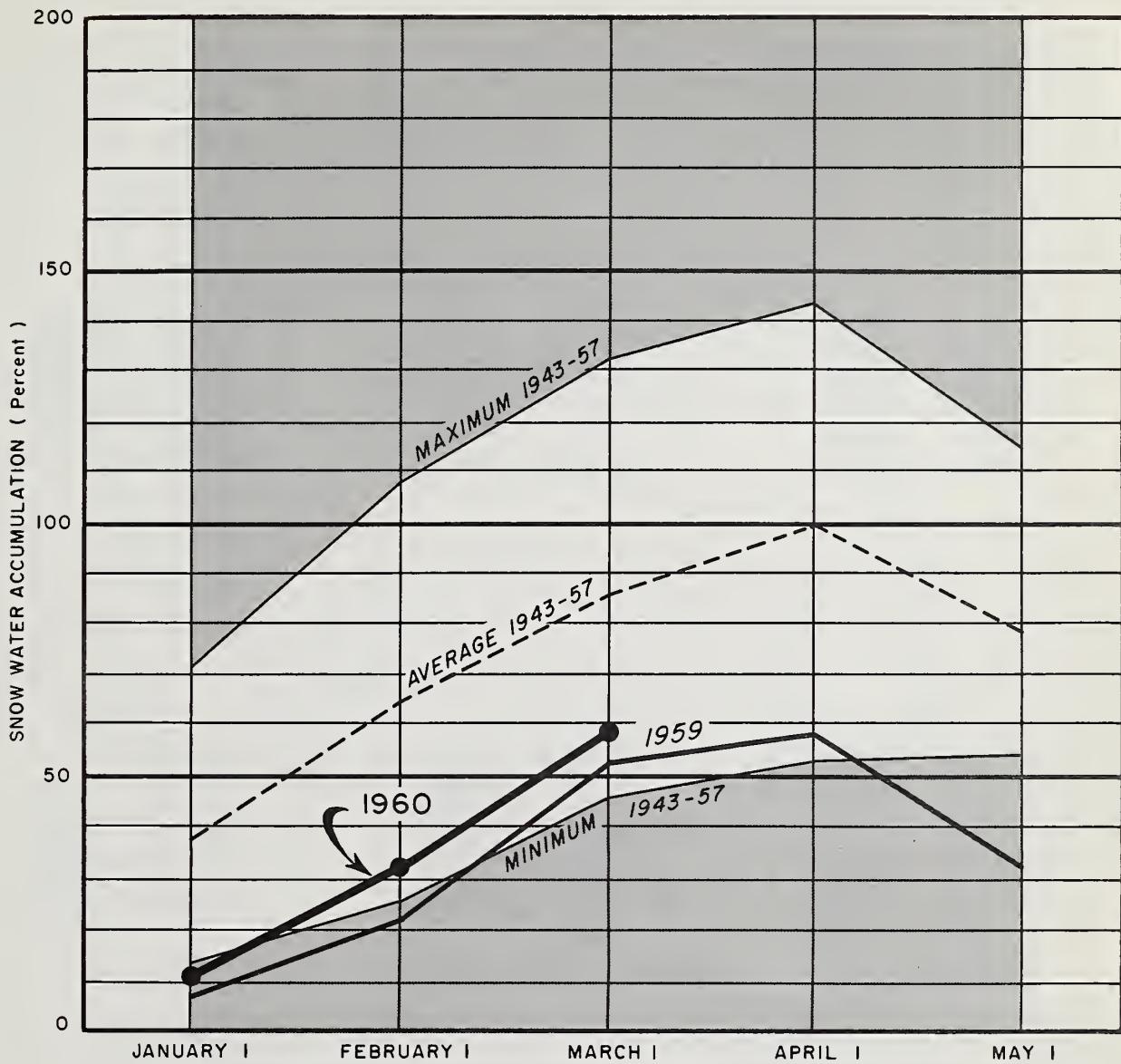


* - Multiple purpose reservoir - space reserved primarily for flood runoff.
 N.R. - No report.



SNOW WATER ACCUMULATION in OREGON

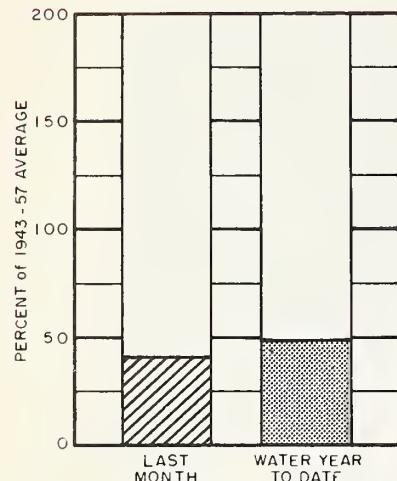
MARCH 1, 1960



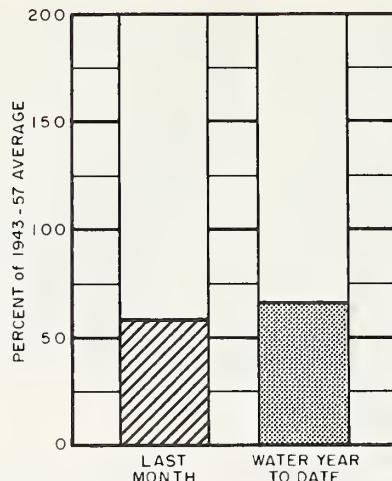
A little better than average February snowfall over most of Oregon still leaves the total accumulation of snow far below normal. On a normal year about 85 percent of the year's total snowpack would be on the ground by March 1. This year the statewide accumulation to date is only 59 percent of the total snow water normally on the watersheds.

CURRENT OREGON STREAMFLOW

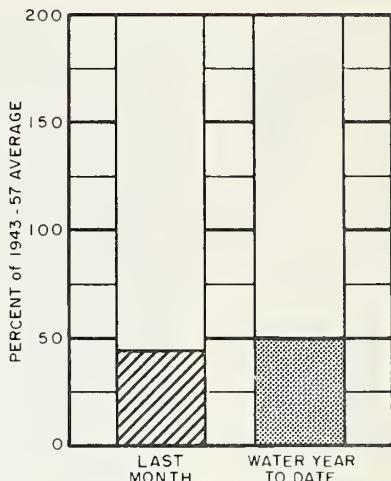
MARCH 1, 1960



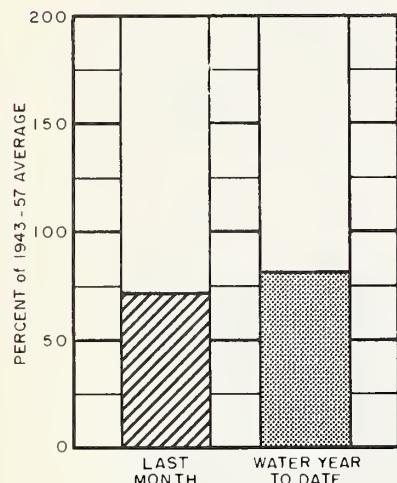
Owyhee Res. net inflow



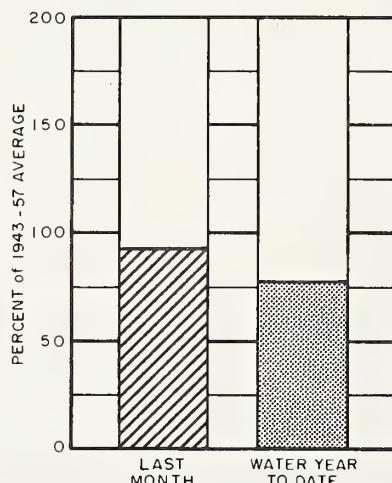
Umatilla near Umatilla



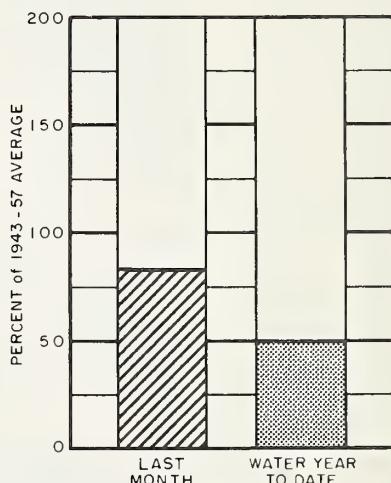
John Day at Service Creek



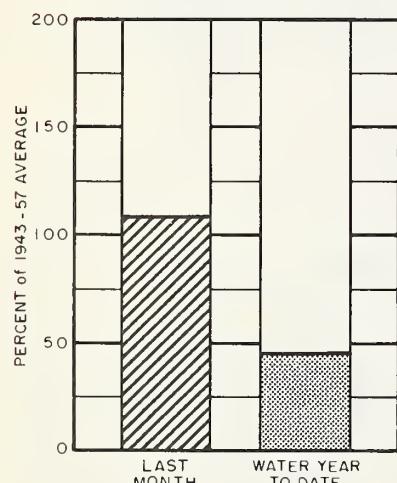
Deschutes at Moody



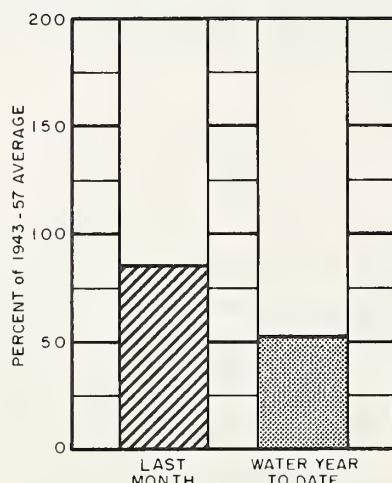
Hood and conduit near Hood River



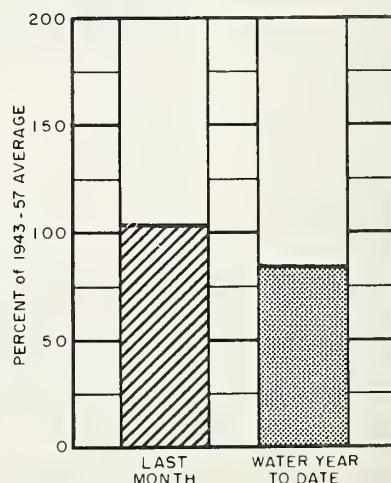
Mid. Fk. Willamette below No. Fk.



Umpqua near Elkton



Rogue at Raygold



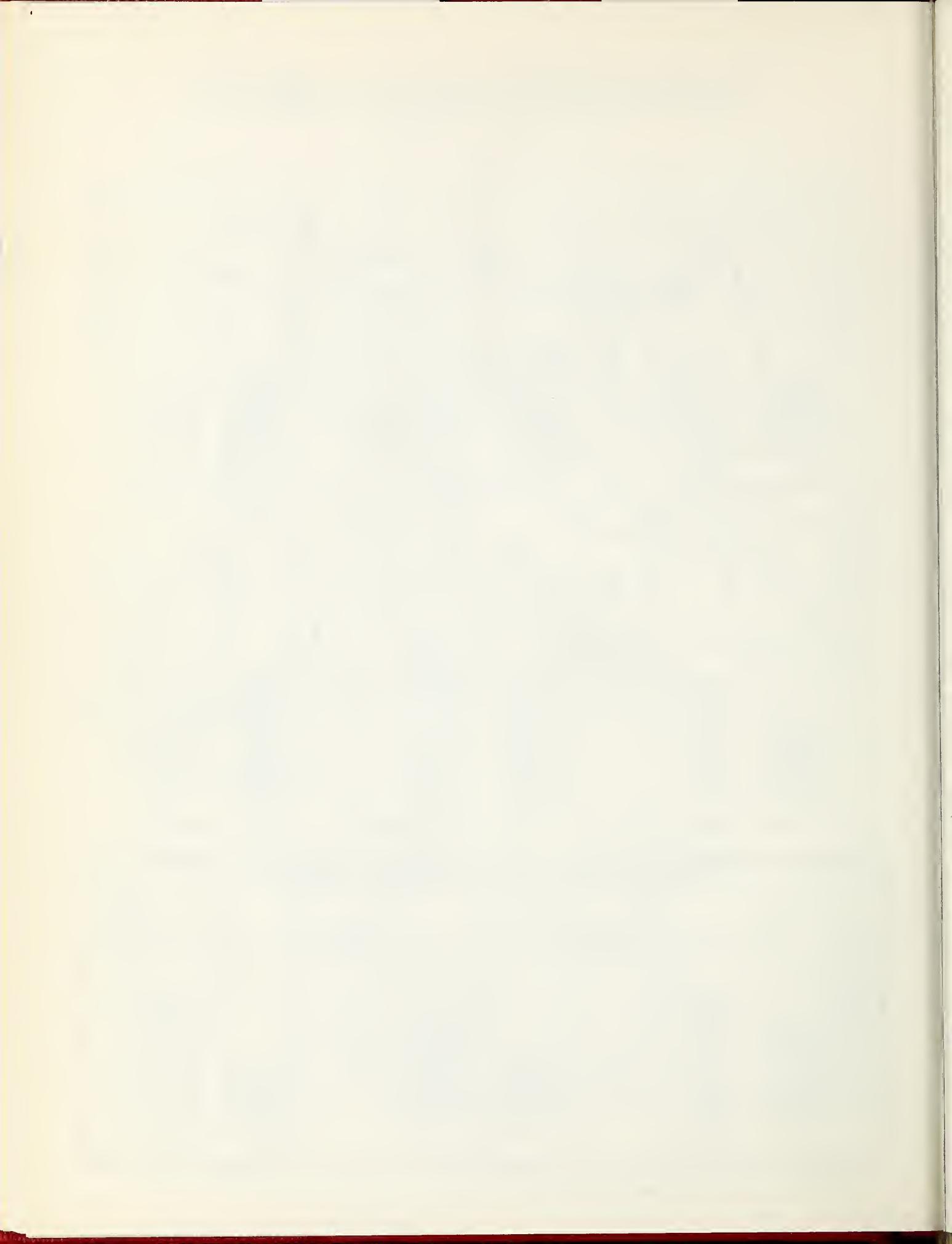
Upper Klamath Lake net inflow

VALLEY PRECIPITATION in OREGON ^a



PRECIPITATION as PERCENT of the 1943-57 AVERAGE					
STATION	LAST MONTH	WATER YEAR TO DATE ^b	STATION	LAST MONTH	WATER YEAR TO DATE ^b
BAKER APT.	114	64	LAKEVIEW	173	72
BEND	117	45	MEDFORD APT.	186	58
BURNS	191	88	NYSSA	190	95
ENTERPRISE	123	71	PENDLETON APT.	97	53
EUGENE APT.	134	60	PORTLAND APT.	91	68
HEPPNER	60	54	ROSEBURG APT.	159	66
JOHN DAY	Report delayed	60	SALEM APT.	99	58
Klamath Falls APT.	218	60	THE DALLES	118	53

(a) Preliminary data furnished by the U.S. Weather Bureau. (b) Oct. 1 to date.



WATER SUPPLY OUTLOOK

OWYHEE, MALHEUR WATERSHEDS

OREGON

as of
MARCH 1, 1960

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

GENERAL OUTLOOK

The outlook for 1960 irrigation water supplies in Malheur County has improved considerably since February 1st and now ranks "fair". Snow and rain during February have totaled above normal.

SNOW COVER

Water content of the mountain snowpack averages 92 percent of normal, 134 percent of last year (at this date) over the Owyhee-Malheur watersheds. The presence of low-elevation snow cover this year contrasts strongly with its absence last year.

SOIL MOISTURE

Moisture in watershed soils has improved especially at lower elevations where rain fell or snow melted on unfrozen soils. The top foot or 18 inches of soil is now "primed" and ready for runoff. Higher elevations, covered by a snowpack, have gained little if any soil moisture in the last month.

RESERVOIR STORAGE

Total stored water in three large reservoirs is 54 percent of normal for this date but only 48 percent of last year's amount, due to lack of satisfactory "carry-over" supplies. Winter inflow to reservoirs has been disappointingly low so far this year.

STREAMFLOW

Flow of the Owyhee River* has averaged 49 percent normal since October 1st and only 41 percent normal for February.

Forecasts of streamflow for the irrigation period, April through September, are all considerably below normal. Flow of the Owyhee is expected to be 53 percent of the 15 year normal (1943-57). Flows of the Malheur near Drewsey and the North Fork Malheur at Beulah have been forecast at 74 and 78 percent of the normal.

Jordan Creek should furnish "fair" water supplies with near "average" supplies available for members of the Jordan Valley Irrigation District.

Many small streams will have "fair" water supplies in the early season with "poor" supplies in late season.

*From preliminary data furnished by North Board of Control, Nyssa, Oregon

Report prepared by:

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WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair"
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Boulder Creek	Fair	Poor
Bully Creek	Fair	Poor
Cow Creek	Fair	Poor
Jordan Creek	Fair	Fair
Jordan Valley Irrig. Dist.	Average	Fair
McDermit Creek	Fair	Poor
Oregon Canyon Creek	Fair	Poor
Owyhee Project	Average	Fair
Sucker Creek	Fair	Poor
Ten Mile Creek	Fair	Poor
Vale, Oregon Irrig. Dist.	Average	Fair
Warm Springs Irrig. Dist.	Average	Fair
Willow Creek	Average	Fair

RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	NORMAL ^b
Agency Valley	60.0	23.2	28.2	33.6
Antelope	36.5	No Report	10.1	
Owyhee	715.0	253.7	501.5	473.1
Warm Springs	191.0	40.0	126.0	83.0

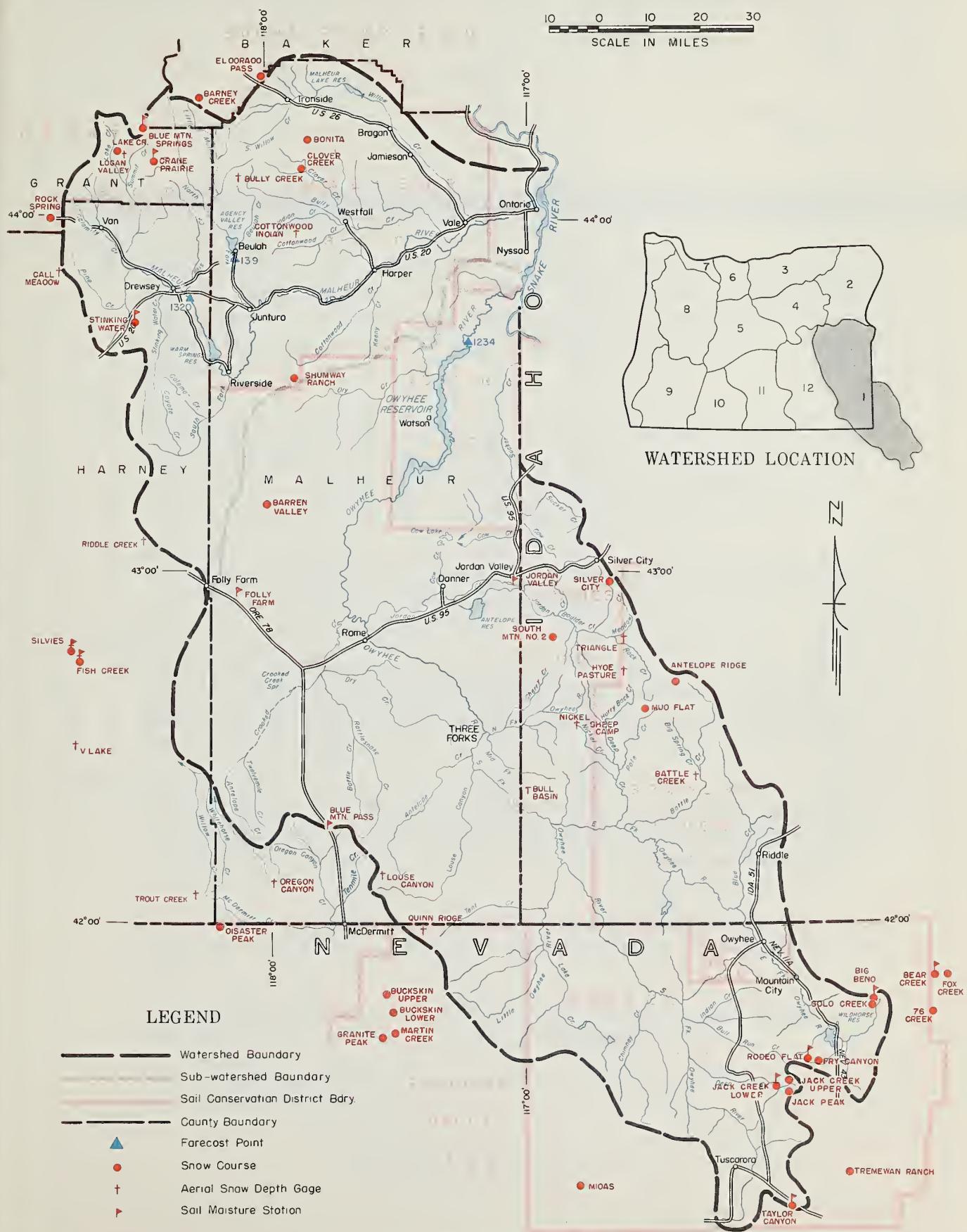
STREAMFLOW FORECASTS^a (1,000 Ac. Ft.)

NO.	FORECAST POINT NAME	FORECAST THIS YEAR	FORECAST PERIOD	NORMAL ^b	THIS YEAR AS PERCENT OF NORMAL
1320	Malheur near Drewsey	60	April-Sept.	81	74
139	Malheur North Fork at Beulah ^d	50	April-Sept.	64	78
1234	Owyhee Reservoir net Inflow ^g	230	April-Sept.	430	53
		210	April-July	412	51
		280	March-July	524	53

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) USBR records of inflow. (h) Not surveyed.

OWYHEE, MALHEUR WATERSHEDS

10 0 10 20 30
SCALE IN MILES



Owyhee, Malheur Watersheds

SNOW

SNOW COURSE		CURRENT INFORMATION			PAST RECORD		
		DATE OF SURVEY	SNOW DEPTH (inches)	WATER CONTENT (inches)	WATER CONTENT (inches)	LAST YEAR	NORMAL <i>b</i>
Antelope Ridge	5900	2/29	22	5.2	3.9	--	0
Barney Creek	5950	2/24	26	6.6	5.2	7.7	13
Barren Valley	4200	<i>h</i>					
Battle Creek ^e	5700	2/27	13	3.6	3.0	--	0
Bear Creek	7800	2/24	47	13.5	15.8	17.6	13
Big Bend	6700	2/29	26	6.9	5.6	8.9	15
Blue Mountain Springs	5900	2/25	47	12.8	8.6	15.2	15
Buckskin, Lower	6700	3/1	28	8.9	6.4	8.4	12
Buckskin, Upper	7200	3/1	30	10.0	7.8	7.9	11
Bull Basin ^e	5600	2/27	9	2.5	2.4	--	0
Bully Creek ^e	5300	2/27	17	4.8	3.9	--	0
Call Meadows ^e	5340	2/27	21	5.9	5.4	--	0
Clover Creek	4100	<i>h</i>					
Cottonwood-Indian ^e	4320	2/27	12	3.4	0.0	--	0
Crane Prairie	5375	2/25	35	9.5	6.1	9.6	15
Disaster Peak	6500	2/28	29	9.2	15.6	15.7	9
Eldorado Pass	4600	2/25	22	5.4	2.6	--	3
Fish Creek	7900	2/22	46	12.9	15.4	--	0
Fox Creek	6800	2/24	32	8.1	6.9	8.9	13
Fry Canyon	6700	2/29	26	7.7	3.4	8.2	15
Gold Creek	6600	2/29	20	5.0	4.1	5.9	14
Granite Peak	7800	3/1	30	9.4	10.0	10.7	15
Hyde Pasture ^e	5800	2/27	21	5.9	3.6	--	0
Jack Creek, Lower	6800	2/26	22	5.0	2.0	3.2	15
Jack Creek, Upper	7250	2/26	37	9.5	6.1	8.9	14
Jack Peak	8420	2/26	67	17.3	15.6	--	1
Lake Creek	5120	2/25	35	9.2	6.7	10.7	15
Logan Valley	5100	2/25	33	9.2	6.0	--	0
Louse Canyon ^e	6440	2/27	13	3.6	1.8	--	0
Martin Creek	7200	3/1	30	9.0	7.9	8.2	15
Midas	5700	2/26	28	8.0	4.4	3.5	12
Mud Flat	5500	2/29	19	5.0	3.6	--	0
Nickel Sheep Camp ^e	5450	2/27	12	3.4	2.1	--	0
Oregon Canyon ^e	7240	2/27	27	7.6	4.2	--	0
Quinn Ridge ^e	6200	2/27	20	5.6	3.6	--	0
Riddle Creek ^e	5300	2/22	12	3.4	0.9	--	0
Rock Springs	5100	2/24	24	6.7	3.2	5.9	15
Rodeo Flat	6800	2/29	22	5.7	2.8	8.2	15
Shumway Ranch	4500	<i>h</i>					
Silver City	6400	2/28	40	12.8	8.8	15.8	9
Silvies ^e	6900	2/22	27	7.6	6.0	--	0
South Mountain No. 2	6340	2/25	36	9.9	7.1	11.4	15
Stinking Water	4800	2/26	14	5.2	T	4.2	12
Taylor Canyon	6200	2/26	23	5.4	3.5	5.0	15
Tremewan Ranch	5700	3/1	9	1.9	T	1.9	15
Triangle ^e	5150	2/27	6	1.7	0.0	--	0
Trout Creek ^e	7800	2/22	20	5.6	3.0	--	0
76 Creek	7100	2/25	33	8.4	8.1	11.1	10
"V" Lake ^e	6600	2/22	20	5.6	1.8	--	0

WATER SUPPLY OUTLOOK

BURNT, POWDER, PINE, GRANDE RONDE, IMNAHA WATERSHEDS

OREGON

as of
MARCH 1, 1960

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

GENERAL OUTLOOK

The water supply outlook for the 1960 irrigation season (April-September) in Wallowa, Union and Baker Counties of northeastern Oregon has not improved during February and remains mostly "fair" to "poor" except where stored water supplies will "save the day." Many irrigated acres will have less water than last year.

SNOW COVER

Water content of the mountain snowpack is only 65 percent of the 15 year normal (1943-57) in this three-county area and is 91 percent of last year at this date. Contrasted with last year, the snowpack on the Wallowas is far below normal, while elsewhere the snow is mostly better than last year.

SOIL MOISTURE

Watershed soil moisture in this area remains very good in the northern section while continuing deficient in the southern half.

RESERVOIR STORAGE

Stored water supplies are fairly satisfactory, but only 78 percent of the supply available at this date a year ago. Total stored water should be adequate for the acres normally served. There have been no reports on the Thief Valley Reservoir.

STREAMFLOW

Forecasts of streamflow for the irrigation season, April through September, are mostly much below normal. Best flows are to be expected from Catherine Creek and the main Grande Ronde which are forecast at 84 and 82 percent of the 1943-57 average.

Flow of the Imnaha River is forecast at 59 percent normal and major Wallowa River tributaries are expected to produce only 55 to 65 percent of their normals.

Powder and Burnt Rivers are forecast to flow 73 and 65 percent of their normals during the six months, April through September.

Many smaller streams will have very limited flow this year with late season water supplies extremely short.

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WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair",
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Alder Slope	Fair	Poor
Baker Valley	Fair	Fair
Big Creek	Fair	Poor
Clover Cr. (nr. N. Powder)	Fair	Poor
Cove	Fair	Fair
Durkee	Fair	Poor
Eagle Valley	Fair	Poor
Elgin	Fair	Poor
Enterprise - Joseph	Average	Fair
Hereford - Bridgeport	Average	Fair
Imnaha River	Fair	Poor
LaGrande - Island City	Average	Fair
Lostine - Wallowa	Fair	Fair
North Powder R. - Wolf Cr.	Fair	Poor
Pine Valley	Fair	Poor
Powder River - Elk Creek	Fair	Poor
Summerville	Fair	Poor
Sumpter Valley	Average	Fair
Union - Hot Lake	Average	Fair
Unity	Average	Fair

RESERVOIR STORAGE (1,000 Ac. Ft.)

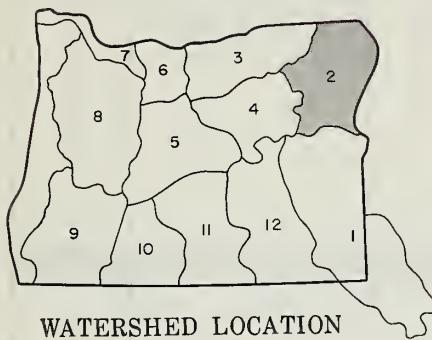
RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	NORMAL ^b
Unity	25.2	7.0	12.6	9.1
Wallowa Lake	37.5	29.3	33.8	21.3

STREAMFLOW FORECASTS^a (1,000 Ac. Ft.)

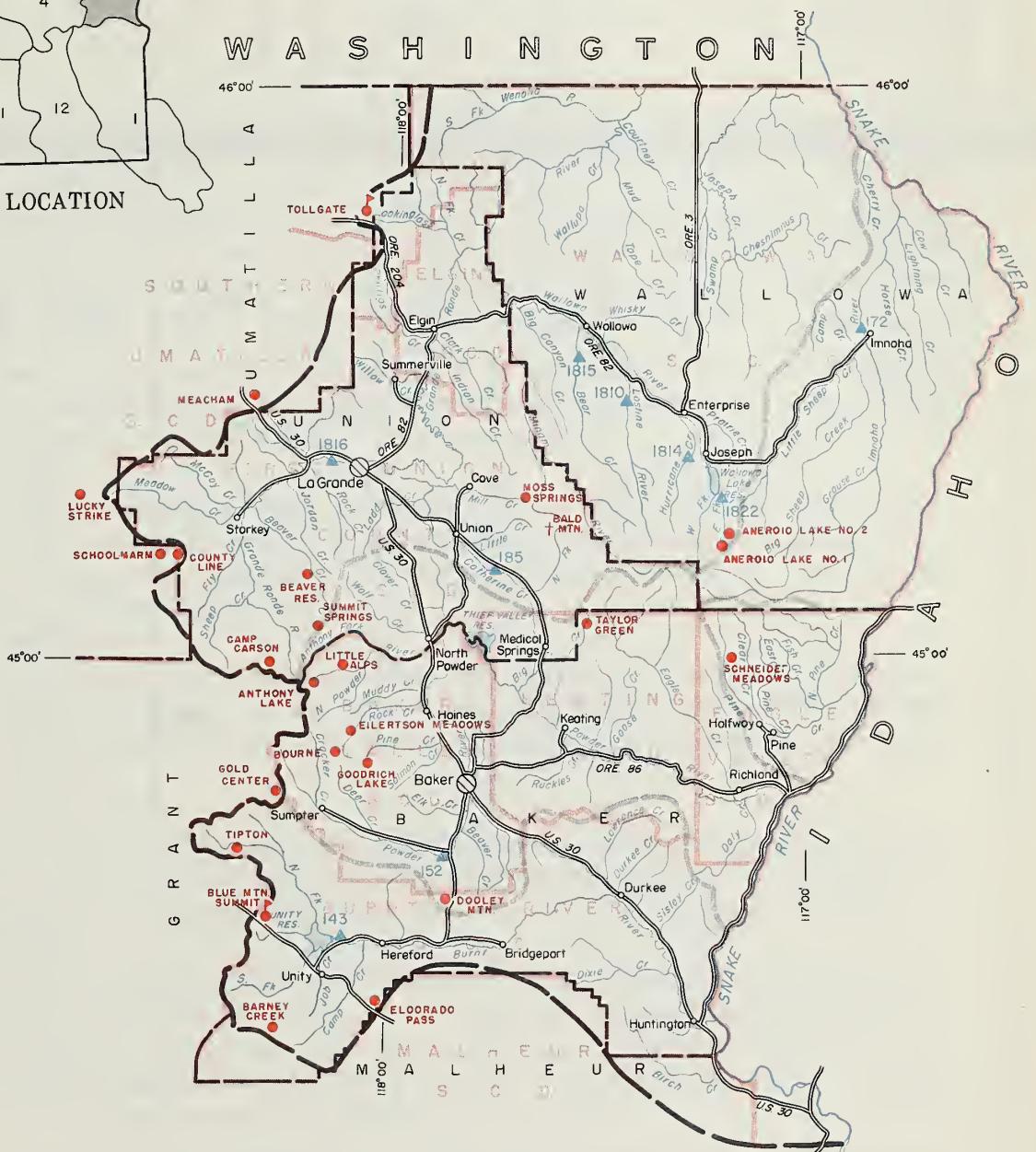
NO.	FORECAST POINT NAME	FORECAST THIS YEAR	FORECAST PERIOD	NORMAL ^b	THIS YEAR AS PERCENT OF NORMAL	
1815	Bear near Wallowa	48	April-Sept.	74	65	
143	Burnt near Hereford ^d	28	April-Sept.	45	65	
185	Catherine near Union	61	April-Sept.	73	84	
1816	Grande Ronde at LaGrande	165	April-Sept.	202	82	
1814	Hurricane near Joseph	27	April-Sept.	49	55	
172	Imnaha at Imnaha	185	April-Sept.	314	59	
1810	Lostine near Lostine	86	April-Sept.	133	65	
152	Powder near Baker	48	April-Sept.	66	73	
1822	Wallowa East Fork near Joseph ^d	47 7.9 6.4	April-July April-Sept. April-July	65 12.1 9.7	72 65 66	

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) Not Surveyed. (h) Partly estimated.

BURNT, POWDER, PINE, GRANDE RONDE, IMNAHA WATERSHEDS



WATERSHED LOCATION



LEGEND

— Watershed Boundary
 — Sub-watershed Boundary
 - - - Soil Conservation District Bdry
 — County Boundary
 Forecast Paint
 ● Snow Course
 Soil Moisture Station
 Aerial Snow Depth Gage

Burnt, Powder, Pine, Grande Ronde, Imnaha Watersheds

SNOW

SNOW COURSE		CURRENT INFORMATION			PAST RECORD		
		DATE OF SURVEY	SNOW DEPTH (inches)	WATER CONTENT (inches)	WATER CONTENT (inches)		YEARS IN NORMAL ^b
NAME	ELEVATION				LAST YEAR	NORMAL ^b	
Aneroid Lake No. 1	7480	2/27	58	16.3	32.4	32.4	14
Aneroid Lake No. 2	7000	2/27	47	13.1	24.2	25.4	14
Anthony Lake	7125	2/26	55	14.6	17.6	25.7	14
Bald Mountain ^e (Ore.)	6700	2/28	61	16.5	--	--	0
Barney Creek	5950	2/24	26	6.6	5.2	7.7	13
Beaver Reservoir	5340	2/26	30	7.5	6.8	10.6	15
Blue Mountain Summit	5098	2/26	28	7.1	4.9	9.0	15
Bourne	5800	2/27	46	12.0	11.8	16.6	14
Camp Carson	5970	c					
County Line	4800	2/29	20	5.2	2.7	6.6	7
Dooley Mountain	5430	2/24	28	8.0	6.9	8.8	15
Eilertson Meadows	5400	2/21	30	7.5	5.5	11.2	14
Eldorado Pass	4600	2/25	22	5.4	2.6	--	3
Gold Center	5340	2/27	38	10.4 ^h	9.0	12.5	14
Goodrich Lake	6775	2/24	54	17.6 ^h	24.0	34.7	10
Little Alps	6200	2/26	37	7.9	8.0	--	0
Lucky Strike	5050	g					
Meacham	4300	2/23	32	9.5	5.1	9.9	15
Moss Springs	5850	2/25	59	15.4	18.0	22.4	15
Schneider Meadows	5400	2/24	65	20.5	23.4	29.7	7
Schoolmarm	4775	2/24	20	5.0	2.4	5.5	8
Summit Springs	6000	c					
Taylor Green	5740	c					
Tipton	5100	2/23	31	7.9	6.1	11.0	12
Tollgate	5070	2/23	47	15.0	17.5	26.2	15

WATER SUPPLY OUTLOOK

UMATILLA, WALLA WALLA, WILLOW, ROCK, LOWER JOHN DAY WATERSHEDS

OREGON

as of

MARCH 1, 1960

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

GENERAL OUTLOOK

The water supply outlook for the 1960 irrigation season, April through September, in Umatilla, Morrow and Gilliam Counties has improved somewhat during February and varies from "average" to "poor" with the poorest outlook indicated for late season supplies on Birch, Butter, Willow, Rhea and Rock Creeks.

Irrigated lands served from Cold Springs Reservoir have a satisfactory water outlook but present storage in McKay, coupled with expected inflow will probably fall just short of filling that reservoir this year.

SNOW COVER

Water content of the mountain snowpack is up to 72 percent normal for this date and is 118 percent of last year. Tollgate Snow Course is the only station with less snow compared to last year and it is only 57 percent normal. Low-elevation snow is much better than last year.

SOIL MOISTURE

Watershed soils under the snowpack are well "primed" at the Tollgate and Emigrant Springs stations. On the other hand, measurements at the Battle Mountain station, between Pilot Rock and Ukiah, indicate the soils are much drier below the top foot.

RESERVOIR STORAGE

Stored water in McKay and Cold Springs Reservoirs averages 66 percent of last year (at this date) and 82 percent of the 15 year normal, 1943 through 1957.

Abnormally cold weather will reduce the chances of filling these reservoirs.

STREAMFLOW

Forecasts of streamflow during the irrigation season, April through September, have been raised slightly except for the South Fork of the Walla Walla River, which remains at 86 percent normal. Flow of the Umatilla at Pendleton is forecast at 91 percent normal, while McKay Creek is expected to flow 81 percent of its 15 year normal (1943-57).

Flow of smaller streams, heading in watersheds of low to moderate elevations, will taper off to minimum flows earlier than normal.

Flow of the Umatilla River near Umatilla* has been 67 percent normal since last October 1st and was only 61 percent normal in February.

*Preliminary data from U. S. Geological Survey, Portland, Oregon

Report prepared by:

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WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair"
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Birch Creek	Fair	Poor
Butter Creek	Fair	Poor
Dry Creek	Fair	Poor
Dugger Creek	Fair	Poor
Johnson Creek	Fair	Poor
McKay Creek	Average	Fair
Mill Creek	Fair	Fair
Mud Creek	Fair	Poor
Pine Creek	Fair	Poor
Rhea Creek	Fair	Poor
Rock Creek	Fair	Poor
Umatilla River (Cold Springs Res.)	Average	Fair
Umatilla River, Main	Average	Fair
Umatilla River (McKay Res.)	Average	Fair
Walla Walla River, Little	Average	Fair
Walla Walla River, Main	Average	Fair
Walla Walla River, N. Fk.	Average	Fair
Walla Walla River, S. Fk.	Average	Fair
Willow Creek	Fair	Poor

RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	NORMAL b
Cold Springs	50.0	41.5	45.4	38.6
McKay	74.0	26.0	57.1	44.1

STREAMFLOW FORECASTS^a (1,000 Ac. Ft.)

NO.	NAME	FORECAST POINT		FORECAST THIS YEAR	FORECAST PERIOD	NORMAL b	THIS YEAR AS PERCENT OF NORMAL
		NO.	NAME				
2213	McKay near Pilot Rock			25	April-Sept.	31	81
				25	April-July	31	81
2236	Umatilla near Gibbon			86	April-Sept.	96	90
223	Umatilla at Pendleton			170	April-Sept.	187	91
				164	April-July	182	90
214	Walla Walla, South Fork near Milton			65	April-Sept.	76	86
				53	April-July	62	85

SNOW

SNOW COURSE	CURRENT INFORMATION				PAST RECORD			
	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)		YEARS IN NORMAL b
						LAST YEAR	NORMAL b	
Arbuckle Mountain	5400	2/26	34	8.6	7.8	11.2	14	
Battle Mountain Summit	4340	2/24	13	2.7	2.1	—	0	
Emigrant Springs	3925	2/23	20	6.0	3.0	7.3	15	
Lucky Strike	5050	g						
Meacham	4300	2/23	32	9.5	5.1	9.9	15	
Pearson Creek	3000	g						
Tollgate	5050	2/23	47	15.0	17.5	26.2	—	15

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) Not surveyed.

UMATILLA, WALLA WALLA, WILLOW, ROCK, LOWER JOHN DAY WATERSHEDS

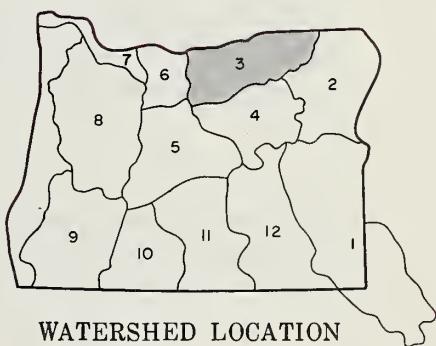
10 0 10 20 30
SCALE IN MILES



LEGEND

The legend consists of six entries, each with a small icon and a label:

- Watershed Boundary (black line)
- Sub-watershed Boundary (light gray line)
- Soil Conservation District Bdry (pink line)
- County Boundary (black line)
- Forecast Point (blue triangle)
- Snow Course (red circle)
- Soil Moisture Station (red flag)



WATER SUPPLY OUTLOOK UPPER JOHN DAY WATERSHEDS OREGON

as of
MARCH 1, 1960

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

GENERAL OUTLOOK

The 1960 outlook for irrigation water supplies in the John Day basin has improved slightly but remains only "fair". The flow of the John Day River* during February was less than half of normal and is still one of the lowest recorded in the state.

SNOW COVER

Water content of mountain snow cover has improved over last month and now stands at 75 percent of normal (1943-57).

The mountain snowpack is now about 25 percent greater than at this time last year, mainly due to the presence of snow at lower elevations this year.

Usually by March 1, nine-tenths of the years total accumulation of snow is on the ground - this year only seven-tenths has been accounted for to date.

SOIL MOISTURE

Soil moisture conditions have changed very little since last month and watershed soils are only partially primed. These soils will absorb valuable snow-melt water to bring them up to capacity before runoff occurs.

STREAMFLOW

Streamflow forecasts for the coming irrigation season (April through September) indicate expected water supplies to be about 75 percent of normal on the John Day. Strawberry Creek forecast came up slightly and is now 78 percent of the 1943-57 normal.

Late season flows of small streams such as Beech Creek, Indian Creek, Pine Creek, Long Creek and others, are still expected to be very limited.

*Preliminary data from U. S. Geological Survey, Portland, Oregon

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WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair",
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Beech Creek	Fair	Poor
Beech Creek-Fox-Long Cr.	Fair	Poor
Bridge-Mountain Creeks	Fair	Poor
Camas Creek	Fair	Fair
Cherry Creek	Fair	Poor
Indian-Pine Creeks	Fair	Poor
John Day River, Main Fork	Average	Fair
John Day River, Mid. Fork	Average	Fair
John Day River, N. Fork	Average	Fair
John Day River, S. Fork	Fair	Fair
Monument-Kimberly	Fair	Fair
Strawberry Creek	Fair	Fair

RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	NORMAL b

STREAMFLOW FORECASTS^a (1,000 Ac. Ft.)

NO.	NAME	FORECAST POINT	FORECAST THIS YEAR	FORECAST PERIOD	NORMAL b	THIS YEAR AS PERCENT OF NORMAL
		NAME				
2415	John Day at Prairie City		40	April-Sept.	54	75
			36	April-July	49	75
2433	John Day, Mid. Fork at Ritter		101	April-Sept.	135	75
2434	Strawberry near Prairie City		7.0	April-Sept.	9.1	78

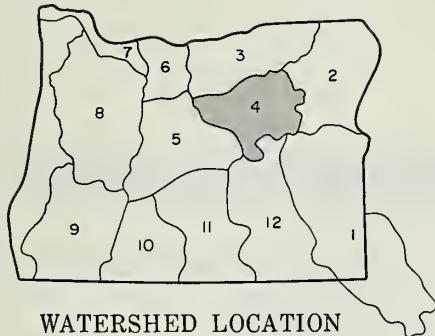
SNOW

SNOW COURSE	CURRENT INFORMATION			PAST RECORD		
	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)
					LAST YEAR	NORMAL b
Anthony Lake	7125	2/26	55	14.6	17.6	25.7
Arbuckle Mountain	5400	2/26	34	8.6	7.8	11.2
Battle Mountain Summit	4340	2/24	13	2.7	2.1	--
Beech Creek Summit	4800	2/24	17	5.0	3.1	5.8
Blue Mountain Springs	5900	2/25	47	12.8	8.6	15.2
Blue Mountain Summit	5098	2/26	28	7.1	4.9	9.0
Derr	5670	2/26	46	8.7	6.8	--
Dixie Springs	6650	c				3
Gold Center	5340	2/27	38	10.4	9.0	12.5
Indian Creek Butte ^e	6550	3/1	60	16.2	--	--
Izee Summit	5293	2/24	25	6.8	4.4	8.1
Lucky Strike	5050	g				15
Marks Creek	4540	2/25	16	3.7	2.2	4.3
Ochoco Meadows	5200	2/25	34	8.1	6.9	10.3
Olive Lake	6000	2/26	49	12.2	11.7	18.6
Schoolmarm	4775	2/24	20	5.0	2.4	5.5
Snow Mountain	6300	c				8
Starr Ridge	5156	2/24	21	5.7	2.9	6.0
Tipton	5100	2/23	31	7.9	6.1	11.0
Williams Ranch	4500	2/29	15	4.2	--	--

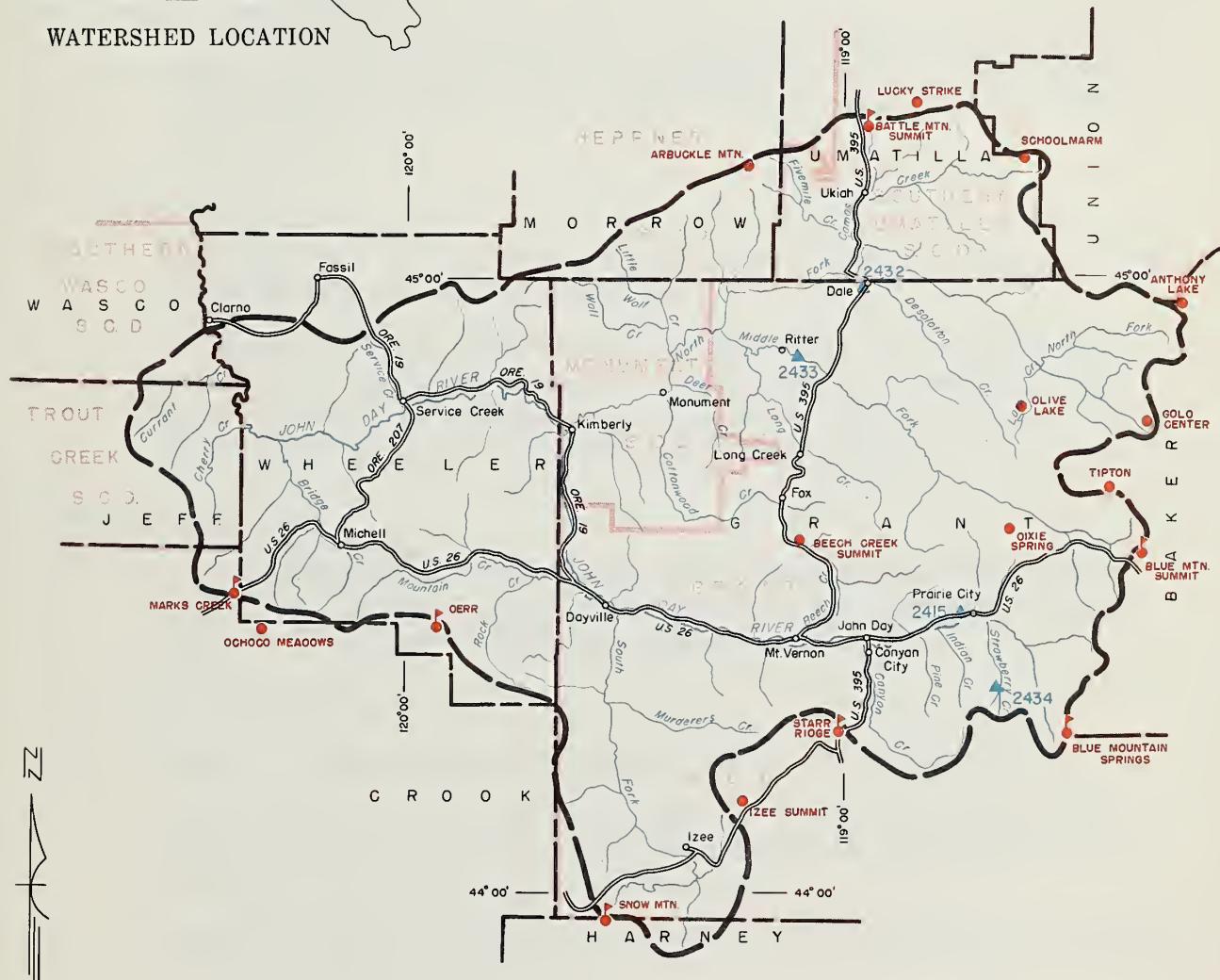
(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) Not surveyed.

UPPER JOHN DAY WATERSHEDS

10 0 10 20 30
SCALE IN MILES



WATERSHED LOCATION



LEGEND

- Watershed Boundary
- Sub-watershed Boundary
- Soil Conservation District Bdry
- County Boundary
- ▲ Forecast Point
- Snow Course
- Soil Moisture Station

WATER SUPPLY OUTLOOK UPPER DESCHUTES, CROOKED WATERSHEDS OREGON

as of
MARCH 1, 1960

U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

GENERAL OUTLOOK

The 1960 water supply outlook in the Deschutes-Crooked River area remains "poor" except for lands served by reservoir stored water and some of these areas will have only "fair" water supplies due to lack of carry-over storage from last year.

SNOW COVER

Water content of the mountain snowpack has come up slightly but is still only 56 percent of normal for this time of year.

The month of February produced about a normal amount of snowfall but the total accumulation is still very low. Usually by March 1 about eight-tenths of the year's total accumulation is on the ground. This year we have only about half that much and only slightly more than last year.

SOIL MOISTURE

A recent check of soil moisture conditions on the watershed indicates that the soils are still drier than usual after some gain last month and will absorb several inches of snow water before runoff occurs.

RESERVOIR STORAGE

Reservoir storage is 94 percent of normal and 70 percent of last year.

Smaller reservoirs without adequate carry-over from last year are not likely to fill, while the larger ones, such as Wickiup and Crescent Lake are close to normal or above normal for this time of year.

Forecasts of inflow to reservoirs of the area varies from 45 percent for Ochoco to 64 percent for Crane Prairie.

Report prepared by:

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WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair",
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Arnold Irrigation Dist.	Average	Fair
Bear Creek	Fair	Poor
Beaver Creek	Fair	Poor
Camp Creek	Fair	Poor
Central Ore. Irrig. Dist.	Average	Fair
Crooked River	Fair	Poor
Deschutes River	Average	Fair
Hay-Trout Creeks	Fair	Poor
Lone Pine Irrig. Dist.	Average	Fair
Mill Creek	Fair	Poor
North Unit Irrig. Dist.	Average	Fair
Ochoco Creek	Fair	Poor
Sisters Irrigation Dist.	Fair	Poor
Snow Creek Irrig. Dist.	Fair	Poor
Squaw Creek Irrig. Dist.	Fair	Poor
Swalley Ditch	Average	Average
Tumalo Project	Average	Fair
Walker Basin Irrig. Dist.	Fair	Fair

RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	NORMAL <i>b</i>
Crane Prairie	55.3	32.3	51.5	44.1
Crescent Lake	92.6	46.6	67.4	47.3
Ochoco	46.0	4.5	28.9	28.5
Wickiup	200.0	155.0	190.6	133.3

Note: The U. S. Bureau of Reclamation indicates that dead storage in the amount of 5360 acre feet may be included in the current storage figure for Crescent Lake.

Water is being transferred from Crane Prairie to Wickiup for holding since the latter reservoir will not fill.

STREAMFLOW FORECASTS^a (1,000 Ac. Ft.)

NO.	FORECAST POINT NAME	FORECAST THIS YEAR	FORECAST PERIOD	NORMAL <i>b</i>	THIS YEAR AS PERCENT OF NORMAL
3220a	Crane Prairie Reservoir total inflow	91	April-Sept.	143	64
323	Crescent at Crescent Lake ^d	16	April-Sept.	31	52
342	Crooked near Post	85	April-Sept.	129	66
317	Deschutes at Benham Falls ^d	395	April-Sept.	602	66
3225	Deschutes below Snow Creek	265	April-July	404	66
314	Deschutes, Little near Lapine ^d	45	April-Sept.	74	61
		70	April-Sept.	113	62
		60	April-July	100	60
3421	Ochoco Reservoir net inflow	15	April-Sept.	32	45
3212	Odell near Crescent	24	April-Sept.	34	71
335	Squaw near Sisters	42	April-Sept.	55	76
338a	Tumalo near Bend ^d	40	April-Sept.	55	73

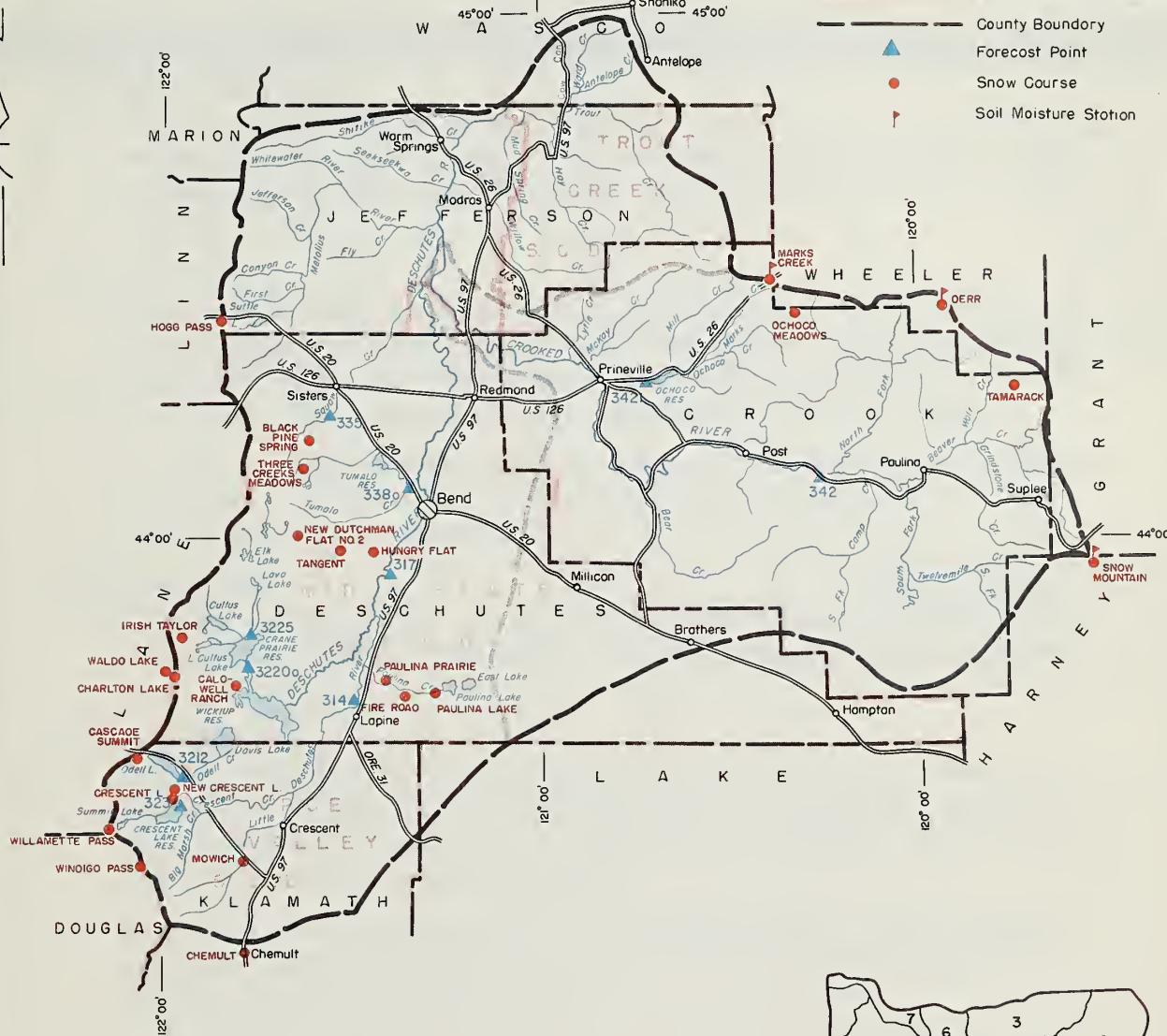
(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) Discontinued.

UPPER DESCHUTES, CROOKED WATERSHEDS

10 0 10 20 30
SCALE IN MILES

LEGEND

- Watershed Boundary
- Sub-watershed Boundary
- Soil Conservation District Bdry.
- County Boundary
- ▲ Forecast Point
- Snow Course
- Soil Moisture Station



Upper Deschutes, Crooked Watersheds

SNOW

SNOW COURSE		CURRENT INFORMATION			PAST RECORD		
		DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)		YEARS IN NORMAL ^b
NAME	ELEVATION				LAST YEAR	NORMAL ^b	
Black Pine Spring**	4600	2/29	13	3.3	4.2	5.9	6
Caldwell Ranch	4400	c					
Cascade Summit	4880	2/23	55	18.9	14.2	30.9	13
Charlton Lake	5750	c					
Chemult	4760	2/26	28	9.3	6.9	12.2	15
Crescent Lake	4760	g					
Derr	5670	2/26	46	8.7	6.8	--	3
Fire Road	5050	2/23	12	3.8	2.7	--	3
Hogg Pass	4755	2/25	60	19.6	20.4	42.0	15
Hungry Flat	4400	2/26	10	2.4	2.2	8.3	6
Irish-Taylor	5500	c					
Marks Creek	4540	2/25	16	3.7	2.2	4.3	15
Mowich	4700	2/23	18	8.3	4.2	--	1
New Crescent Lake	4800	2/23	34	12.3	8.2	17.2	6
New Dutchman Flat No. 2*	6400	2/26	76	27.0	28.4	51.0	10
Ochoco Meadows	5200	2/25	34	8.1	6.9	10.3	15
Paulina Lake	6330	2/23	32	9.1	9.3	--	3
Paulina Prairie	4285	2/23	0	0.0	0.0	--	3
Snow Mountain	6300	c					
Tamarack	4800	2/25	24	5.2	2.3	6.0	14
Tangent	5400	2/26	45	12.8	11.1	24.5	6
Three Creeks Meadows	5600	2/29	28	9.5	11.2	20.7	11
Waldo Lake	5500	c					
Willamette Pass	5600	2/25	70	25.2	20.1	41.9	7
Windigo Pass	5800	2/24	62	22.4	18.6	43.8	7

*New snow course replacing
New Dutchman Flat; normal
is for old course.

**150 feet south of site of
former course.

WATER SUPPLY OUTLOOK HOOD, MILE CREEKS, LOWER DESCHUTES WATERSHEDS OREGON

as of
MARCH 1, 1960

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE . OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

GENERAL OUTLOOK

The water supply outlook for the 1960 irrigation season, April through September, in Hood River Valley and Wasco County is "fair" to "poor". This is essentially the same as one month ago and very nearly the same as one year ago.

SNOW COVER

Water content of the mountain snowpack is 47 percent of the 1943-57 normal and 96 percent of last year. Snow at lower elevations is significantly better than a year ago. Brooks Meadows on February 25th had a water content of 6.8 inches compared to an expected normal of 15.0 on April 1.

In a normal winter there is usually 85 percent of the total winter's snowpack on the ground by March 1. This year only about 42 percent of a normal winter's snow has accumulated.

SOIL MOISTURE

Although watershed soil moisture conditions have improved somewhat since February 1st, there is still a moderate shortage of water in the soils of this area.

STREAMFLOW

The flow of Hood River* during February was only 61 percent normal while the flow from October 1st to date has been 67 percent normal. It was erroneously reported last month that the January flow was above normal - actually it was about 40 percent of normal.

Forecasts for streamflow during the 1960 irrigation season, April through September, range from 70 percent normal on White River to 74 percent normal on the Hood near Hood River.

Flow of smaller streams and tributaries is expected to taper off to minimum flows at a much earlier date than normal.

Juniper Flat Irrigation District will benefit by the additional water made available in Clear Lake Reservoir and should have a reasonably satisfactory season. Stored water makes quite a difference.

*Preliminary data furnished by U. S. Geological Survey, Portland, Oregon

Report prepared by:

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WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair"
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Aldridge Ditch	Poor	Poor
Badger Creek	Poor	Poor
Dee Irrigation District	Fair	Poor
East Fork Irrig. Dist.	Fair	Fair
Farmers Irrig. Dist.	Fair	Poor
Glacier Irrig. Dist.	Fair	Poor
Hood River Irrig. Dist.	Fair	Poor
Juniper Flat	Average	Fair
Middle Fork Irrig. Dist.	Fair	Poor
Mile Creeks	Poor	Poor
Mill Creek	Poor	Poor
Mount Hood Irrig. Dist.	Fair	Poor
Rock-Gate-Threemile Crs.	Poor	Poor
Tygh Creek	Poor	Poor
White River	Fair	Poor

RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	NORMAL b

STREAMFLOW FORECASTS^a (1,000 Ac. Ft.)

NO.	FORECAST POINT NAME	FORECAST THIS YEAR	FORECAST PERIOD	NORMAL b	THIS YEAR AS PERCENT OF NORMAL
437	Hood near Hood River ^d	270	April-Sept.	365	74
		225	April-July	311	72
438	Hood, West Fork near Dee	130	April-Sept.	174	75
		110	April-July	151	73
3613	White below Tygh Valley	125	April-Sept.	178	70
		110	April-July	161	68

SNOW

SNOW COURSE NAME	ELEVATION	CURRENT INFORMATION			PAST RECORD		
		DATE OF SURVEY	SNOW DEPTH (inches)	WATER CONTENT (inches)	WATER CONTENT (inches)		YEARS IN NORMAL b
					LAST YEAR	NORMAL b	
Brooks Meadows	4300	2/25	25	6.8	--	--	0
Clear Lake	3800	2/26	20	5.9	6.1	13.5	14
Clear Lake Experimental Course		2/26	32	9.8	9.0	--	0
Greenpoint Reservoir	3400	2/24	32	12.8	9.0	18.3	9
Knebal Springs	3850	2/25	17	4.8	--	--	0
Phlox Point	5600	2/25	93	30.4	30.7	60.5	14
Red Hill	4400	2/28	62	20.5	20.7	49.2	10
Still Creek	3700	2/25	42	13.3	11.4	25.5	15
Tilly Jane	6000	2/20	57	19.0	28.9	47.7	7
Ulrich Ranch Junction	3350	2/25	14	4.8	--	--	0

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed.

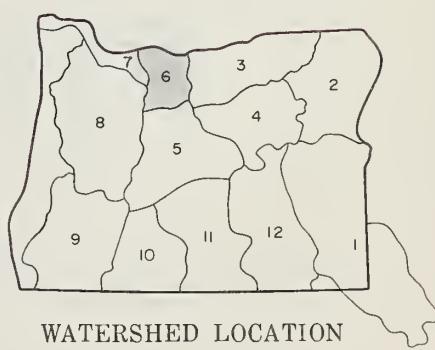
HOOD, MILE CREEKS, LOWER DESCHUTES WATERSHEDS

10 0 10 20
SCALE IN MILES



LEGEND

- Watershed Boundary
- Sub-watershed Boundary
- Soil Conservation District Bdry.
- County Boundary
- Forecast Point
- Snow Course



WATERSHED LOCATION

WATER SUPPLY OUTLOOK LOWER COLUMBIA WATERSHEDS OREGON

as of
MARCH 1, 1960

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

GENERAL OUTLOOK

The water supply outlook for spring and summer flow of the Columbia River near The Dalles has dropped slightly during the month of February. The river is now forecast at 92 percent of the 15 year normal (1943-57).

SNOW COVER

All of the Canadian snow courses in the Columbia River basin and most of the courses in the United States were measured near the last of February or the 1st of March. Water content of the snow in the northern half of the Columbia basin dropped in relation to normal and the southern half increased significantly during the month of February. Most of the basin now has a snowpack below normal.

SOIL MOISTURE

Watershed soils in the northern half of the basin are well primed and should not absorb a significant amount of the snow water when the melt begins.

Rainfall and snow-melt during the month of February increased soil moisture status slightly at the lower elevations in the southern half of the basin. At high elevations, however, the soils are very dry and will reduce streamflow from the light snowpack in the area.

STREAMFLOW

The flow of the Columbia River near The Dalles* was a little below normal for January and February but has been much above normal for the previous three months of the water year.

<u>Month</u>	<u>Percent of Normal Discharge (1943-57)</u>			
October	182	Adjusted for storage		
November	161	"	"	"
December	132	"	"	"
January	91	"	"	"
February	96	"	"	"

*From preliminary data furnished by U.S. Geological Survey, Portland, Oregon

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STREAMFLOW FORECASTS^a(1,000 Ac. Ft.)

FORECAST POINT		FORECAST THIS YEAR	FORECAST PERIOD	NORMAL ^b	THIS YEAR AS PERCENT OF NORMAL
NO.	NAME				
09-B	Columbia at The Dalles	97,600 67,000	April-Sept. April-June	106,100 72,000	92 93

HISTORICAL DATA (Columbia River at The Dalles)

YEAR	STREAMFLOW ^c (1,000 A.F.)			PEAK ^e (1,000 c.f.s)	DATE
	APR.— SEPT.	APR.— JUNE	MAY— JUNE		
1943	115,000	75,300	52,400	541	June 21
1944	61,900	39,200	32,100	326	June 19
1945	81,600	54,600	47,300	505	June 8
1946	108,100	75,400	59,600	581	May 30
1947	100,300	70,000	56,800	536	May 11
1948	130,500	94,600	81,900	999	May 31
1949	95,700	71,400	56,000	622	May 18
1950	120,400	74,700	61,200	744	June 25
1951	113,000	75,600	59,100	597	May 26
1952	107,700	77,500	57,300	557	May 28
1953	100,600	64,900	55,800	609	June 17
1954	119,500	70,500	59,300	561	May 23
1955	99,500	58,300	50,300	545	June 26
1956	131,400	96,900	75,800	815	June 3
1957	105,700	80,500	67,200	700	May 22
1943-57 Avg.	106,100	72,000	58,100	616	
1958	97,700	72,000	58,600	593	May 31

LOWER COLUMBIA RIVER FLOOD STAGES (with 9.5' tide at Astoria)^f

VANCOUVER ^g GAGE (Weather Bu.)	FLOW AT THE DALLES (1,000 c.f.s.)	DRAINAGE DISTRICT PUMPHOUSE						
		SANDY	SAUVIE ISL.	SCAPPOOSE	DEER ISL.	RAINIER	BEAVER	WOODSON
RIVER MILES								
		118.9	96.0	91.0	77.0	62.0	52.0	47.0
35 (1894)	1210	41.2	34.2	33.3	28.5	21.9	17.5	15.5
34	1160	40.5	33.5	32.5	27.7	21.2	17.0	15.0
33	1100	39.6	32.4	31.4	26.7	20.2	16.1	14.3
32	1050	38.9	31.5	30.5	25.7	19.5	15.4	13.7
31 (1948)	1000	38.0	30.7	29.5	25.1	18.8	14.7	13.0
30	940	36.6	29.5	28.5	24.3	18.1	14.0	12.4
29	890	35.5	28.5	27.7	23.7	17.5	13.4	11.8
28	840	34.3	27.5	26.7	22.8	17.0	13.0	11.4
27 (1956)	790	33.0	26.5	25.6	21.8	16.2	12.5	11.0
26 (1950)	750	32.1	25.5	24.6	20.9	15.5	12.2	10.7
25	700	30.7	24.2	23.2	19.7	14.6	11.7	10.3
24	660	29.7	23.0	22.2	19.0	14.1	11.4	10.2
23	630	29.0	22.3	21.4	18.4	13.6	11.2	10.0
22	590	28.1	21.4	20.3	17.2	13.0	10.9	9.7
21	560	27.2	20.7	19.5	16.4	12.6	10.6	9.6
20	530	26.2	19.8	18.6	15.5	12.1	10.2	9.4
19	510	25.5	19.2	18.0	15.0	11.8	10.0	9.3
18	480	24.4	18.3	17.2	14.3	11.4	9.8	9.1
17	450	23.4	17.4	16.4	13.7	11.0	9.6	8.9
16	430	22.4	16.5	15.5	13.0	10.5	9.3	8.7

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Observed flow corrected for storage in F.D.R., Kootenai, Pend Oreille, Flathead, Hungry Horse, Lake Chelan, Coeur d'Alene and Grand Coulee Equalizer. (d) Not scheduled. (e) Observed peak. (f) Based on Corps of Engineers automatic water stage recorder data. (g) Vancouver Weather Bureau gage zero is 1.82' above M.S.L.. All other readings are in feet above M.S.L.

LOWER COLUMBIA WATERSHEDS

10 0 10 20 30
SCALE IN MILES



LEGEND

- Watershed Boundary
- Sub-watershed Boundary
- Soil Conservation District Bdry.
- County Boundary
- River Miles



WATER SUPPLY OUTLOOK

WILLAMETTE WATERSHEDS

OREGON

as of
MARCH 1, 1960

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

GENERAL OUTLOOK

The 1960 water supply outlook for the Willamette Valley remains only "fair". Streamflow forecasts range from 66 to 88 percent of the 1943-57 normal.

SNOW COVER

Snow cover along the west face of the Cascades is only 49 percent of normal for March 1 although it is about 22 percent higher than last year at this time.

The year's total snow crop is less than half accounted for where usually by this time of the year a little over eight-tenths is on the ground. This year snow is above normal at lower elevations and is well below normal at higher elevation snow courses. This is in direct contrast with last year, when we had no snow at lower watersheds.

SOIL MOISTURE

Soil moisture conditions were improved slightly by the above normal precipitation in the upper end of the valley but are still much drier than usual. High elevation soils which remained covered by snow remain unchanged from last month.

RESERVOIR STORAGE

Reservoir storage in four of the five multi-purpose dams averages 123 percent of normal for this time of year. Lookout Point is just slightly under last year's figure at this time.

STREAMFLOW

The Middle Fork of the Willamette* flowed 85 percent of normal (1943-57) last month, but is still only 50 percent of normal for the October through February period.

Forecasts of spring and summer runoff varies from 66 percent on the North Santiam to 88 percent on the Row. Smaller streams without adequate storage are expected to have only "fair" early season flow, falling to "poor" in the late season. All forecasts assume normal meteorological conditions for the remainder of the year.

*Preliminary data furnished by U. S. Geological Survey, Portland, Oregon

Report prepared by:

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WATER SUPPLY OUTLOOK expressed as "Poor", "Fair", "Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Calapooia	Fair	Poor
Clackamas	Average	Fair
McKenzie	Average	Fair
Molalla	Fair	Poor
Santiam, North	Average	Fair
Santiam, South	Average	Fair
Willamette, Coast Fork	Average	Fair
Willamette, Middle Fork	Average	Fair

RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	NORMAL ^b
Cottage Grove	30.0*	9.1	7.5	9.7
Detroit	299.9*	134.4	106.8	67.1
Dorena	70.5*	21.1	19.8	23.0
Fern Ridge	94.2*	37.4	29.6	35.1
Lookout Point	337.2*	89.6	96.0	—

*Multiple purpose reservoir--space reserved primarily for flood runoff.

STREAMFLOW FORECASTS^a (1,000 Ac. Ft.)

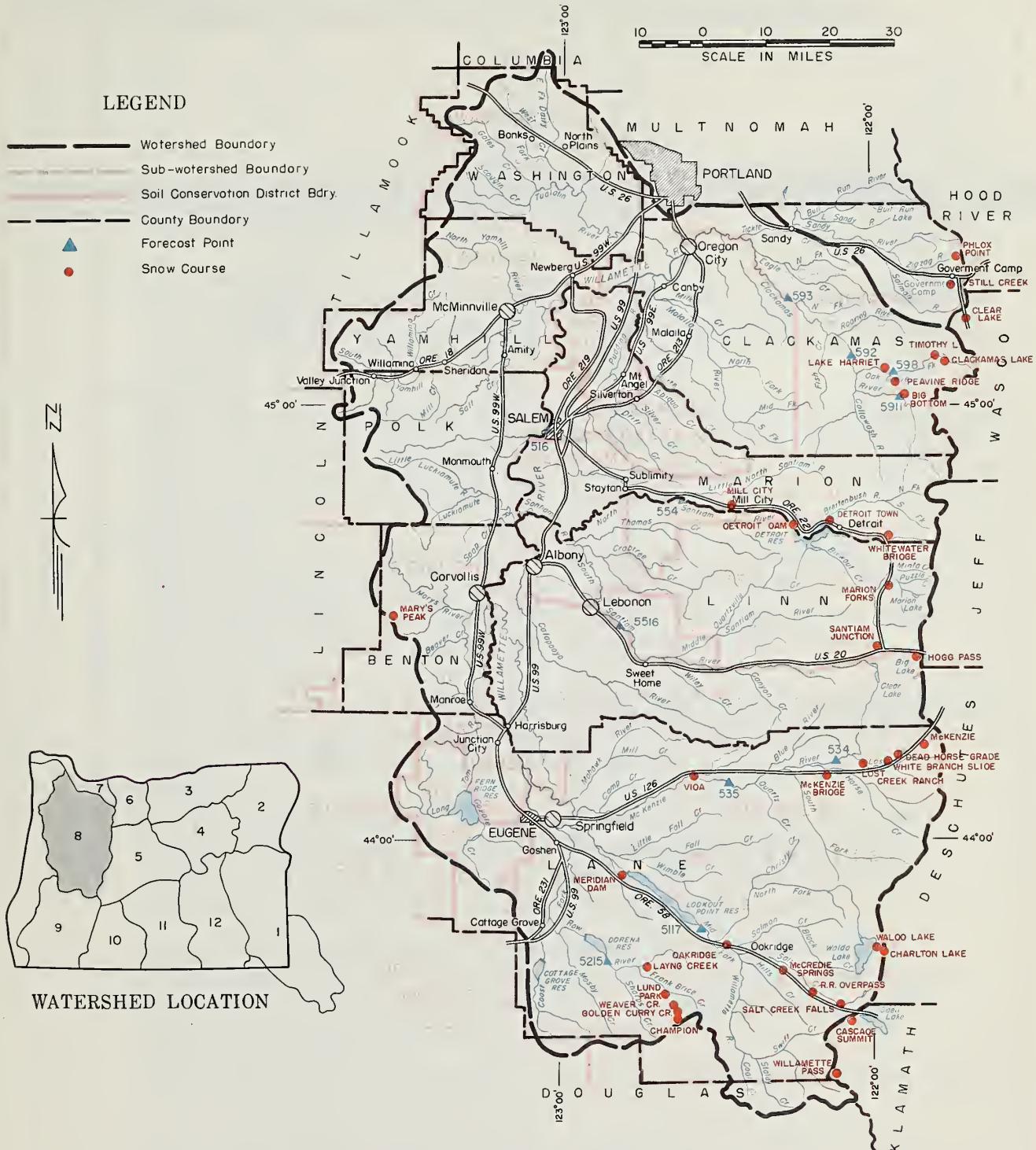
NO.	NAME	FORECAST POINT		NORMAL ^b	THIS YEAR AS PERCENT OF NORMAL		
		NO.	NAME				
5911	Clackamas at Big Bottom			135	April-Sept.	184	73
				105	April-July	150	70
593	Clackamas at Estacada			735	April-Sept.	879	84
				640	April-July	763	84
592	Clackamas above Three Lynx			545	April-Sept.	674	81
				460	April-July	578	80
534	McKenzie at McKenzie Bridge			465	April-Sept.	640	73
				345	April-July	488	71
535	McKenzie near Vida			960	April-Sept.	1362	70
				770	April-July	1120	69
598	Oak Grove Fork above Power Intake			155	April-Sept.	198	78
				120	April-July	156	77
5215	Row near Dorena			100	April-Sept.	114	88
				95	April-July	109	87
554	Santiam, North at Meham ^d			645	April-Sept.	968	67
				575	April-July	866	66
5516	Santiam, South at Waterloo			470	April-Sept.	652	72
				435	April-July	616	71
5117	Willamette, Mid. Fork below North Fork near Oakridge			720	April-Sept.	909	79
				635	April-July	804	79
516	Willamette at Salem ^d			4025	April-Sept.	5320	76
				3545	April-July	4810	74

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) Partly estimated. (h) Not surveyed.

WILLAMETTE WATERSHEDS

LEGEND

Watershed Boundary
Sub-watershed Boundary
Soil Conservation District Bdry.
County Boundary
Forecast Point
Snow Course



SNOW

SNOW COURSE		CURRENT INFORMATION			PAST RECORD		
		DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)		YEARS IN NORMAL ^b
NAME	ELEVATION				LAST YEAR	NORMAL ^b	
Big Bottom	2118	2/29	0	0.0	1.5	8.9	7
Cascade Summit	4880	2/23	55	18.9	14.2	30.9	13
Champion	4500	2/26	69	23.7	12.9	24.7	15
Charlton Lake	5750	c					
Clackamas Lake	3400	2/25	22	6.7 ^g	5.9	15.7	13
Clear Lake	3500	2/26	20	5.9	6.1	13.5	14
Clear Lake Experimental Course		2/26	32	9.8	9.0	--	0
Dead Horse Grade	3800	2/29	36	11.6	7.4	24.5	7
Detroit Town	1600	2/25	0	0.0	0.0	2.0	8
Detroit Dam	1580	2/25	0	0.0	0.0	0.9	8
Golden Curry Creek	3136	2/26	10	2.5 ^g	4.1	7.5	8
Hogg Pass	4755	2/25	60	19.6	20.4	42.0	15
Lake Harriet	2045	2/29	0	0.0	1.2	3.3	7
Layng Creek	1200	2/26	0	0.0	0.0	0.0	8
Lost Creek Ranch	1746	2/29	0	0.0	0.0	--	4
Lund Park	1740	2/26	0	0.0	0.0	1.5	8
Marion Forks	2730	2/25	19	6.7	5.4	15.9	15
Marys Peak	3620	h					
McCredie Springs	2120	2/23	0	0.0	0.0	1.1	9
McKenzie	4800	2/29	64	21.9	18.9	47.8	8
McKenzie Bridge	1372	2/29	0	0.0	0.0	2.2	6
Meridian Dam	750	2/23	0	0.0	0.0	0.0	8
Mill City	826	2/25	0	0.0	0.0	0.0	9
Oakridge	1310	2/23	0	0.0	0.0	T	8
Peavine Ridge	3500	2/29	35	12.4	8.8	18.8	15
Phlox Point	5600	2/25	93	30.4	30.7	60.5	14
Railroad Overpass	2750	2/23	0	0.0	0.0	6.0	9
Salt Creek Falls	4000	2/23	36	12.0	4.6	20.1	9
Santiam Junction	3990	2/25	35	11.8	11.1	25.3	15
Still Creek	3700	2/25	42	13.3	11.4	25.5	15
Timothy Lake	3295	2/29	29	9.0	6.6	--	2
Vida	800	2/29	0	0.0	0.0	0.0	5
Waldo Lake	5500	c					
Weaver Creek	2440	2/26	T	T	0.0	2.8	7
White Branch Slide	2800	2/29	14	3.9	T	8.7	7
Whitewater Bridge	2175	2/25	T	T	T	9.7	9
Willamette Pass	5600	2/25	70	25.2	20.1	41.9	7

WATER SUPPLY OUTLOOK

ROGUE, UMPQUA WATERSHEDS

OREGON

as of
MARCH 1, 1960

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

GENERAL OUTLOOK

The water supply outlook for the 1960 irrigation season, April through September, in the Rogue-Umpqua watersheds has been improved over the February 1st outlook but is still only "fair" but not up to "average".

SNOW COVER

Water content of the mountain snowpack averages 75 percent of the normal for these watersheds and is 121 percent of last year on this date. Contrasted with last year is the presence of a fairly satisfactory snowpack on lower elevations.

High elevation snow is considerably below normal.

SOIL MOISTURE

Unfortunately, the snowpack lies on relatively dry soils, especially in the higher watersheds. These dry soils will soak up more than the usual amount of snow-melt water. Recent rains have penetrated through the top foot of soils only at the lower elevations and improved the condition there.

RESERVOIR STORAGE

Stored water in local reservoirs is 71 percent normal but only 55 percent of that available at this date last year. Emigrant Reservoir is under construction and cannot furnish water supplies this season.

STREAMFLOW

Flow of streams in this area* has been extremely low this year since last October 1st. The Rogue has averaged 51 percent normal and the Umpqua 45 percent. The February flows were much greater and came up to 86 percent on the Rogue and 106 percent on the Umpqua.

Forecasts of expected flow of local streams for the irrigation season, April through September, vary from 85 percent normal on the Illinois and Applegate Rivers and 83 percent on the Rogue down through 77 percent on the Umpqua to 70 and 71 percent on the Little Butte.

A new forecast on the South Fork of Little Butte indicates that minimum flow will drop to 100 c.f.s. by June 3rd.

Flow of many small streams heading in low elevations will be better than last year but will taper off earlier than normal.

*Preliminary data furnished by U.S. Geological Survey, Portland, Oregon

Report prepared by:

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WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair",
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Althouse Creek	Fair	Fair
Applegate River, Big	Average	Fair
Applegate River, Little	Average	Fair
Ashland Creek	Average	Fair
Butte Creek, Little	Average	Fair
Butte Creek, Big	Average	Fair
Cow Creek	Fair	Fair
Deer Creek	Fair	Fair
Elk Creek	Fair	Fair
Emigrant Cr. (above Res.)	Fair	Fair
Evans Creek	Fair	Fair
Gold Hill Irrigation Dist.	Average	Fair
Grants Pass Irrig. Dist.	Average	Average
Grave Creek	Fair	Fair
Illinois River, East Fork	Average	Fair
Illinois River, West Fork	Average	Fair
Neil Creek	Fair	Fair
Red Blanket Creek	Average	Fair
Rogue River	Average	Fair
Sucker Creek	Fair	Fair
Table Rock Irrig. Dist.	Average	Fair
Thompson Creek	Fair	Fair
Wagner Creek	Fair	Fair
Williams Creek	Fair	Fair

RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	NORMAL ^b
Emigrant Gap	8.3	g	4.4	6.1
Fish Lake	7.8	4.1	7.9	5.3
Fourmile Lake	16.1	4.2 ^h	15.2	8.7
Howard Prairie	60.0	7.7	5.5	—
Hyatt Prairie	16.1	6.7	12.7	7.0

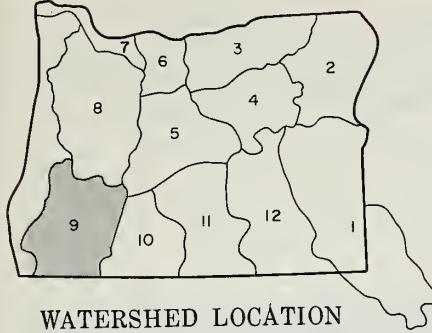
STREAMFLOW FORECASTS^a (1,000 Ac. Ft.)

NO.	FORECAST POINT NAME	FORECAST THIS YEAR	FORECAST PERIOD	NORMAL ^b	THIS YEAR AS PERCENT OF NORMAL	
					FORECAST THIS YEAR	FORECAST PERIOD
7294	Applegate near Copper	110	April-Sept.	131	84	
7420a	Clearwater above Trap Creek ^d	54	April-Sept.	73	74	
8321	Fourmile Lake net inflow ^d	5.2	April-Sept.	7.4	70	
8320	Hyatt Reservoir net inflow ^d	4.8	April-Sept.	6.2	77	
712	Illinois River near Kerby ^d	165	April-Sept.	196	85	
7230	Little Butte, North Fork below Fish Lake ^d	11.8	April-Sept.	16.9	70	
722	Rogue above Prospect	290	April-Sept.	351	83	
		235	April-July	293	80	
7263a	Rogue, South Fork near Prospect ^d	67	April-Sept.	83	81	
		56	April-July	71	79	
7277	Rogue below South Fork	615	April-Sept.	749	82	
		485	April-July	608	80	
724	Rogue at Raygold near Central Point	825	April-Sept.	1004	82	
		670	April-July	842	80	
7292	Rogue at Grants Pass	800	April-Sept.	974	82	
7419	Umpqua, North Fork below Lake Creek ^d	144	April-Sept.	186	77	
728	Little Butte, South Fork near Lake Creek	30	April-July	42	71	
	Note: Minimum flow will drop to 100 c.f.s. by June 3, 1960					

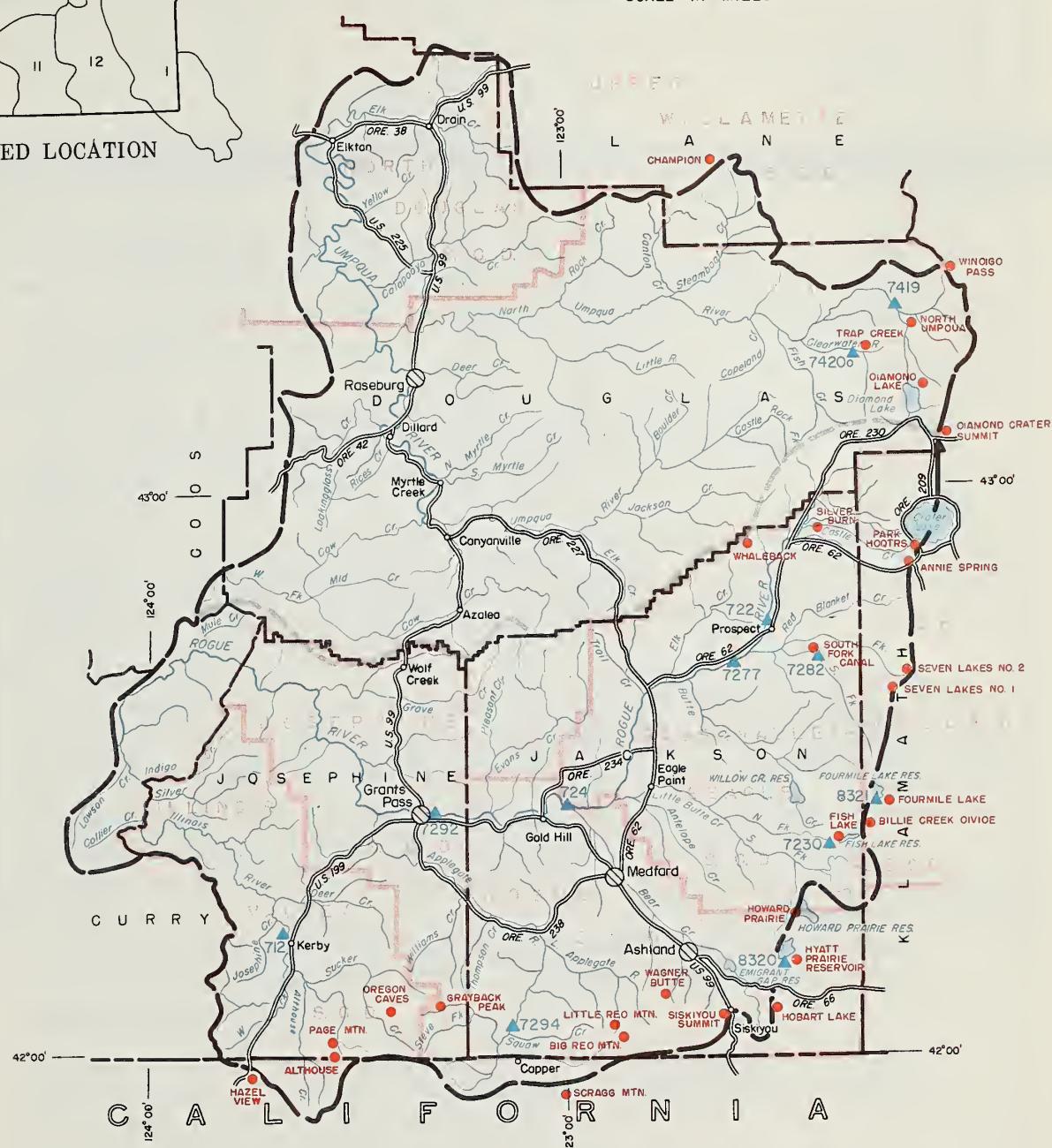
(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) Not Surveyed.

(h) Snow surveys delayed. (i) Partly estimated. (j) Not surveyed.

ROGUE, UMPQUA WATERSHEDS



WATERSHED LOCATION



LEGEND

Legend:

- Watershed Boundary (Solid black line)
- Sub-watershed Boundary (Dashed black line)
- Sail Conservation District Bdry (Light blue shaded area)
- County Boundary (Solid black line)
- Forecast Paint (Blue triangle)
- Snow Course (Red circle)

Rogue, Umpqua Watersheds

SNOW

SNOW COURSE		DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	CURRENT INFORMATION			PAST RECORD		
					LAST YEAR	NORMAL ^b	YEARS IN NORMAL ^b	WATER CONTENT (Inches)	LAST YEAR	NORMAL ^b
Althouse	4530	2/25	12	4.1	7.8	5.8	15			
Annie Spring	6018	2/25	75	29.0	28.1	41.0	15			
Beaver Dam Creek	5100	2/24	34	11.5	--	--	0			
Big Red Mountain	6500	2/29	64	26.4	28.1	26.7	8			
Billie Creek Divide	5300	2/26	47	16.6	9.8	23.4	14			
Champion	4500	2/26	69	23.7	12.9	24.7	15			
Cold Springs Camp	6100	2/27	61	21.5	16.4	--	0			
Deadwood Jct.	4600	2/24	31	10.3	--	--	0			
Diamond-Crater Summit	5800	2/21	60	21.4	16.8	--	0			
Diamond Lake	5315	2/21	43	14.9	11.8	23.0	15			
Fish Lake	4670	2/26	26	9.3	3.6	11.5	14			
Grayback Peak	6000	3/3	69	24.1	25.1	23.4	15			
Hazel View	2500	2/25	0	0.0	0.0	--	3			
Hobart Lake	5010	2/25	25	7.2	4.0	7.3	9			
Howard Prairie	4560	2/24	27	8.8	--	--	0			
Hyatt Prairie Reservoir	4900	2/25	28	9.6 ⁱ	4.5	10.2	14			
Little Red Mountain	6500	3/1	52	22.4	24.0	20.6	8			
North Umpqua	4215	2/28	32	10.3	4.4	15.1	5			
Page Mountain	4045	2/25	4	1.2	8.6	--	3			
Park Headquarters	6450	2/25	86	34.1	35.5	53.4	14			
Rye Spring Spur	5000	2/26	33	12.0	--	--	0			
Seven Lakes #1	6800	2/24	86	35.0	31.2	48.8	9			
Seven Lakes #2	6200	2/24	71	26.3	19.4	35.9	9			
Silver Burn	3720	2/25	33	12.0	7.2	13.3	15			
Siskiyou Summit	4630	2/26	20	7.4	6.6	6.8	13			
South Fork Canal	3500	2/25	T	T	--	3.4	15			
Trap Creek	3800	2/27	34	10.4	3.7	--	3			
Wagner Butte	6900	2/23	44	14.6	--	15.8	14			
Whaleback	5140	2/24	64	24.3	19.7	34.8	10			
Windigo Pass	5800	2/24	62	22.4	18.6	43.8	7			
New Umpqua Snow Surveys										
Eden Valley Summit	2390	3/1	T	T	--	--	0			
Quartz Mountain #1	4500	j								
Quartz Mountain #2	4000	2/25	13	3.7	--	--	0			
Quartz Mountain #3	3700	2/25	13	3.8	--	--	0			
Red Butte #1	4560	2/24	41	16.3	--	--	0			
Red Butte #2	4000	2/24	19	5.9	--	--	0			
Douglas County Water Resources Survey begins 6 new snow surveys this year on Umpqua watersheds.										

WATER SUPPLY OUTLOOK KLAMATH WATERSHEDS OREGON

as of
MARCH 1, 1960

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

GENERAL OUTLOOK

The water supply outlook for the 1960 irrigation season, April through September, in the Klamath Basin is still only "fair". In spite of heavy precipitation, snow cover did not increase abnormally although soil moisture was improved in lower elevations.

SNOW COVER

Water content of the mountain snow cover averages 70 percent of the 15 year normal (1943-57) and 128 percent of last year at this date. There is considerably more low-elevation snow than last winter.

SOIL MOISTURE

Watershed soils in the lower elevations gained good moisture from the rain and snow-melt during the past month. Actually, the soils are not yet fully "primed". Soils at the high elevations are probably unchanged from their relatively dry condition of last fall.

RESERVOIR STORAGE

Stored water supplies in three large reservoirs average 78 percent of normal and 65 percent of last year at this date. Gerber is 22 percent of normal; Clear Lake is 74 percent and Upper Klamath Lake is 86 percent of normal.

Gerber Reservoir, with only 8,600 acre feet in storage, will need most of the 20,000 acre feet of inflow that is forecast if it is to be able to serve its dependent lands with reasonable water supplies.

STREAMFLOW

Inflow to Upper Klamath Lake* has been 84 percent normal since October 1st. The flow in February was 103 percent normal, reflecting rain storms cutting across the Cascades.

Forecasted inflow to Upper Klamath Lake for the April-September period is 71 percent of normal. The Williamson River is expected to flow 71 percent and the Sprague River 51 percent of normal.

Inflow to Clear Lake and Gerber Reservoir for the March-July period has been forecast at 45 percent of the 15 year normal, 1943-57.

Many smaller streams can expect a relatively "short" water season unless abnormally heavy rains occur during the summer period.

*Preliminary data furnished by California-Oregon Power Co., Medford, Oregon

Report prepared by: _____
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WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair",
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Ft. Klamath Valley	Average	Fair
Lost River (Clear Lake)	Average	Fair
Lost River (Gerber)	Average	Poor
Lost River (Willow Res.)	Fair	Poor
Sprague River	Fair	Poor
Upper Klamath Lake	Average	Fair
Williamson River	Average	Fair

RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	NORMAL <i>b</i>
Clear Lake	440.2	166.6	289.0	224.0
Gerber	94.0	8.6	50.5	38.3
Upper Klamath Lake	584.0	334.2	444.6	390.0

STREAMFLOW FORECASTS^a (1,000 Ac. Ft.)

NO.	NAME	FORECAST POINT	FORECAST THIS YEAR	FORECAST PERIOD	NORMAL <i>b</i>	THIS YEAR AS PERCENT OF NORMAL
823	Clear Lake Reservoir inflow ^g		25	April-Sept.	50	50
			40	March-July	88	45
8215	Gerber Reservoir inflow ^g		12	April-Sept.	25	48
			20	March-July	44	45
8421	Sprague near Chiloquin		150	April-Sept.	296	51
			450	April-Sept.	632	71
832	Upper Klamath Lake net inflow ^g		370	April-July	518	71
			345	April-Sept.	486	71
8419	Williamson below Sprague River		295	April-July	413	71

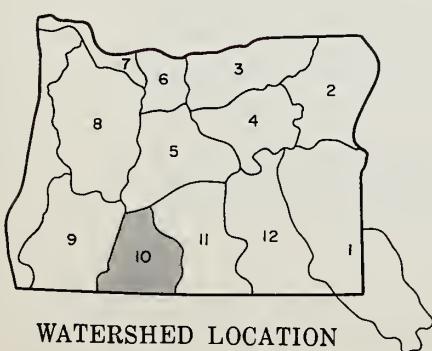
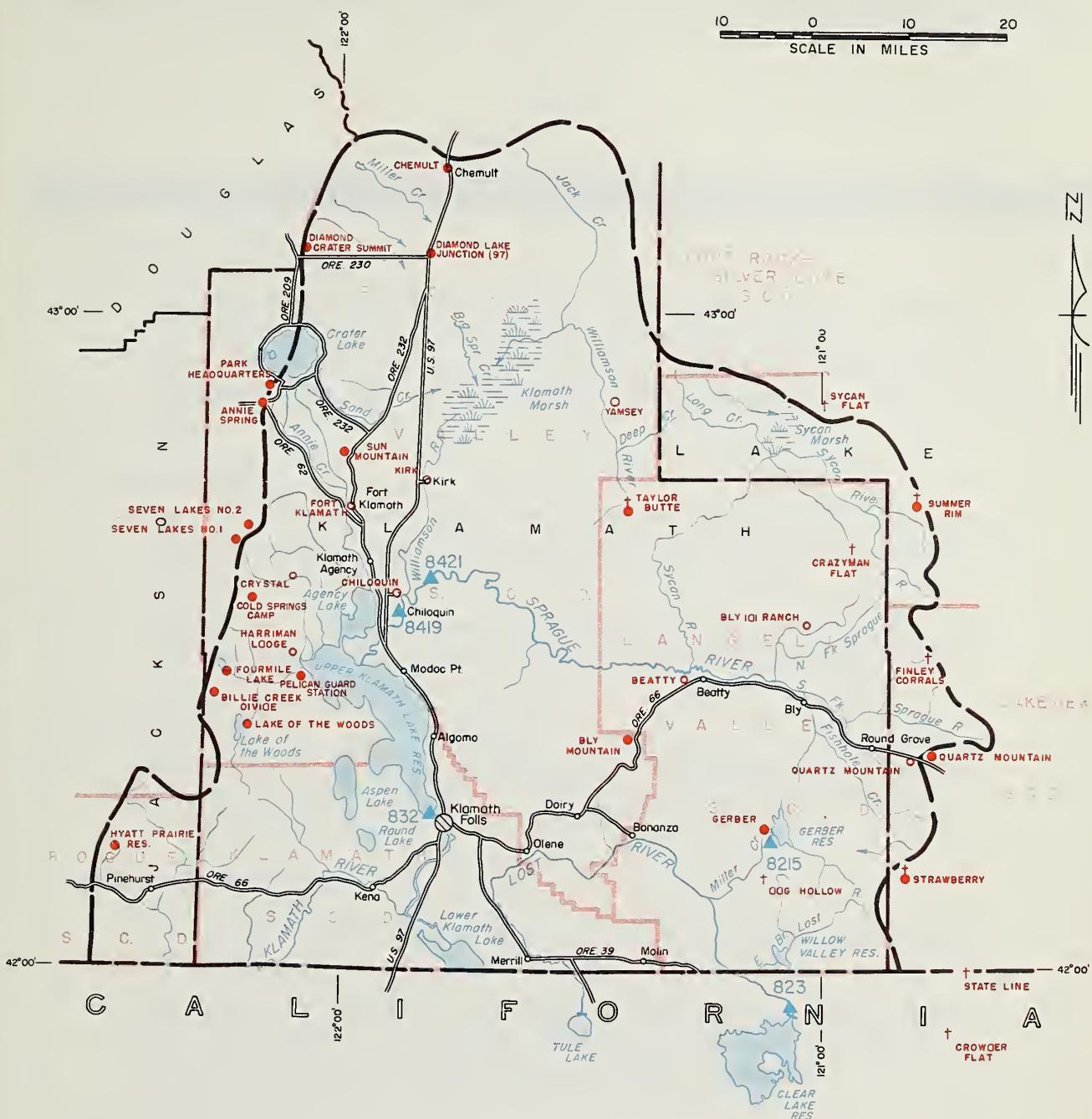
SNOW

SNOW COURSE	NAME	ELEVATION	CURRENT INFORMATION			PAST RECORD	
			DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)	YEARS IN NORMAL <i>b</i>
						LAST YEAR	NORMAL <i>b</i>
Annie Spring	6018	2/25	75	29.0	28.1	41.0	15
Beatty (COPCO)	4300	<i>f</i>					
Billie Creek Divide	5300	2/26	47	16.6	9.8	23.4	14
Bly Mountain	5090	2/26	16	5.0	3.9	—	0
Bly 101 Ranch (COPCO)	4800	<i>f</i>					
Chemult	4760	2/26	28	9.3	6.9	12.2	15
Chiloquin (COPCO)	4187	<i>f</i>					
Cold Springs Camp	6100	2/27	61	21.5	16.4	—	0
Crazyman Flat ^e	6100	2/21	24	7.8	3.6	—	0
Crowder Flat ^e	5200	2/22	12	3.9	0.0	3.5	8
Crystal (COPCO)	4200	<i>f</i>					
Diamond-Crater Summit	5800	2/21	60	21.4	16.8	—	0
Diamond Lake Junction (97)	4600	2/21	18	6.3	6.8	—	0
Dog Hollow ^e	4900	2/21	0	0.0	0.0	—	0
Finley Corrals ^e	6000	2/21	38	12.3	7.8	—	0
Fort Klamath (COPCO)	4150	<i>f</i>					
Gerber	4850	2/29	3	1.5	0.3	3.1	7
Harriman Lodge (COPCO)	4200	<i>f</i>					
Hyatt Prairie Reservoir	4900	2/25	28	9.6 ⁱ	4.5	10.2	14
Kirk (COPCO)	4533	<i>f</i>					
Lake of the Woods	4960	2/25	22	8.1	6.3	11.2	15
Park Headquarters	6450	2/25	86	34.1	35.5	53.4	14
Pelican Guard Station	4150	2/27	10	3.1	T	—	0
Quartz Mountain	5320	2/26	21	6.5	4.1	6.3	15
Quartz Mountain (COPCO)	5504	2/26	22	6.8	5.0	6.5	14
Seven Lakes No. 1	6800	2/24	86	35.0	31.2	48.8	9
Seven Lakes No. 2	6200	2/24	71	26.3	19.4	35.9	9
State Line ^e	5750	2/22	25	8.1	6.3	—	0
Strawberry ^e	5600	2/21	18	5.8	3.6	9.9	11
Summer Rim	7200	2/24	33	9.7	9.1	14.8	13
Sun Mountain	5350	2/25	46	16.1	13.9	25.4	15
Sycan Flat ^e	5500	2/21	22	7.1	3.6	—	0
Taylor Butte	5100	2/23	14	4.7	3.0	9.1	3
Yamsey (COPCO)	4600	<i>f</i>					

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) From COPCO or USBR records of inflow. (h) Flashboards increase capacity to 513.0 (i) Partly estimated.

KLAMATH WATERSHEDS

10 0 10 20
SCALE IN MILES



WATERSHED LOCATION

LEGEND

- Watershed Boundary
- Sub-watershed Boundary
- Siskiyou Soil Conservation District Bdry
- County Boundary
- Forecast Point
- Snow Course
- Aerial Snow Depth Gage
- COPCO Snow Station

WATER SUPPLY OUTLOOK

LAKE COUNTY, GOOSE LAKE WATERSHEDS

OREGON

as of
MARCH 1, 1960

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE . OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

GENERAL OUTLOOK

The water supply outlook for the 1960 irrigation season in Lake County is still only "fair" but is much improved over last year. Snowfall was a little greater than normal in February but watershed soils are still drier than usual although slightly improved by the above normal February rains at low elevations.

SNOW COVER

Snow cover has improved during the last month and is now 83 percent of the 1943-57 normal. There is 43 percent more snow water now than at this time last year.

On a normal year almost nine-tenths of the total snowpack is on the watershed by March 1. This year only seven-tenths has accumulated to date.

SOIL MOISTURE

Soil moisture conditions in the area have been improved during February by above normal precipitation. This has helped prime unfrozen soils at lower elevations.

RESERVOIR STORAGE

Cottonwood and Drews Reservoirs are 71 and 26 percent of normal for this time of year.

Cottonwood now has about eight-tenths as much water as at this time last year, while Drews has only about one-fourth as much as last year, due to a lack of "carry-over" storage after a dry season last year.

STREAMFLOW

Streamflow forecasts have improved on Deep Creek, Honey Creek and Twentymile Creek and are now 84, 80, and 70 percent of normal (1943-57) respectively.

Water users on streams not served by reservoirs will likely experience "poor" late season flows.

Report prepared by:

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WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair", "Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Chewaucan River	Fair	Fair
Crooked Creek	Fair	Poor
Deep Creek	Fair	Fair
Dry Creek	Fair	Poor
East Side Goose Lake	Fair	Poor
Guano Lake	Fair	Poor
Honey Creek	Fair	Fair
Lakeview Water Users Assn.	Fair	Fair
Rock Creek	Fair	Poor
Silver-Buck Creeks	Fair	Poor
Summer Lake	Fair	Fair
Thomas Creek	Fair	Poor
Twentymile Creek	Fair	Poor
Warner Lakes	Fair	Poor

RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	NORMAL <i>b</i>
Cottonwood	4.1	0.5	0.6	0.7
Drew	62.5	10.5	43.1	40.7

STREAMFLOW FORECASTS^a (1,000 Ac. Ft.)

NO.	NAME	FORECAST POINT	FORECAST THIS YEAR	FORECAST PERIOD	NORMAL <i>b</i>	THIS YEAR AS PERCENT OF NORMAL
924	Chewaucan near Paisley		54	April-June	82	66
9127	Deep above Adel		60	April-June	71	84
814	Drew Reservoir net inflow		c	April-July	34	
			26	March-July	47	55
9114	Honey near Plush		13	April-June	16.3	80
916	Twentymile near Adel		14	April-June	20	70

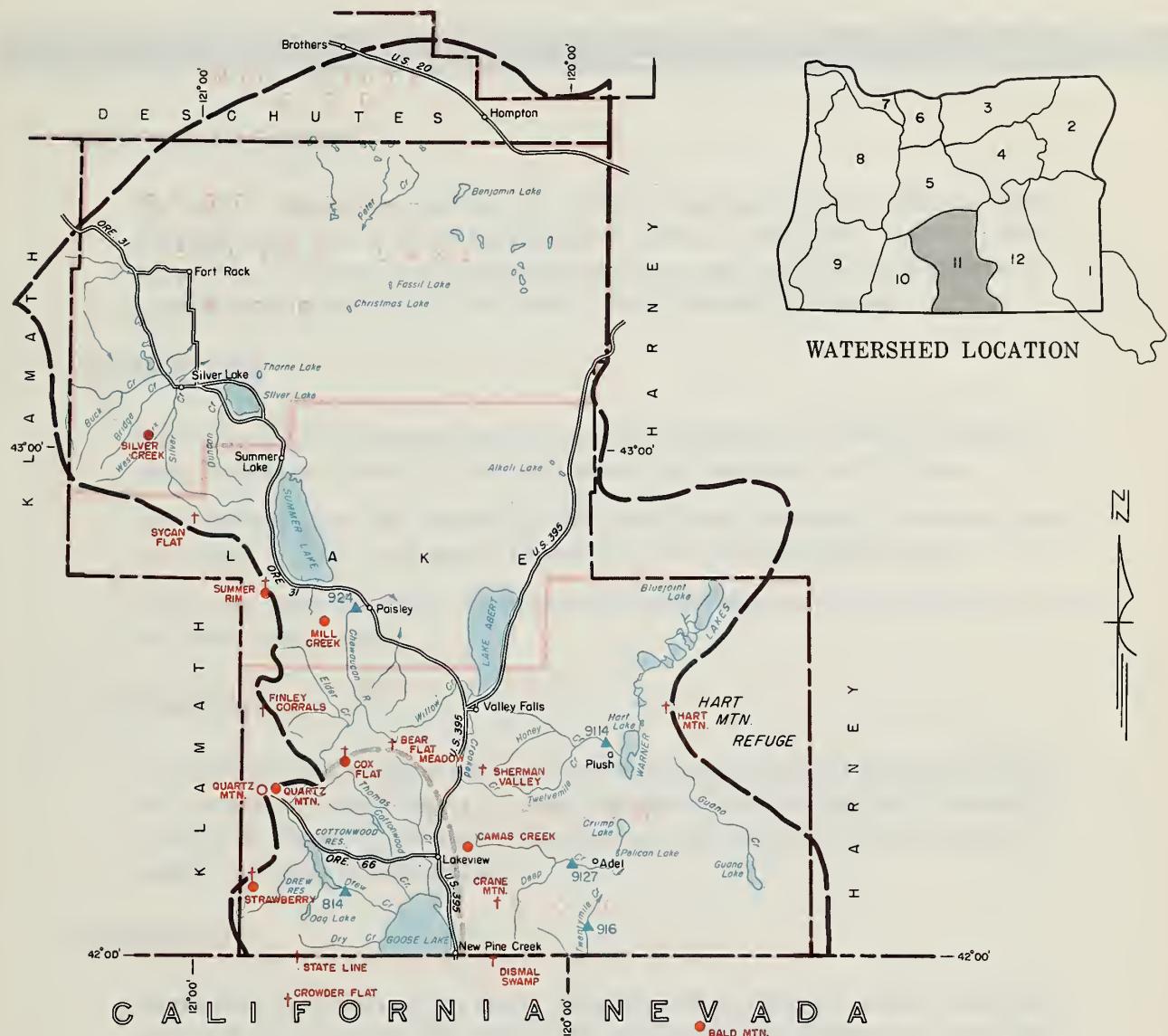
SNOW

SNOW COURSE	CURRENT INFORMATION			PAST RECORD		
	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)
					LAST YEAR	NORMAL <i>b</i>
Bald Mountain (Nev.)	6720	<i>f</i>				
Bear Flat Meadow ^e	5900	2/21	26	8.4	7.2	--
Camas Creek	5720	2/27	31	11.4	4.9	10.8
Cox Flat ^e	5750	2/21	22	7.1	6.3	--
Crane Mountain ^e	6020	2/22	18	5.8	3.0	--
Crowder Flat ^e	5200	2/22	12	3.9	0.0	3.5
Dismal Swamp ^e (Calif.)	7000	2/22	36	11.7	11.7	--
Finley Corrals ^e	6000	2/21	38	12.3	7.8	--
Hart Mountain ^e	6350	2/23	10	3.2	--	--
Mill Creek	6200	2/25	23	6.4	5.1	8.1
Quartz Mountain (COPCO)	5504	2/26	22	6.8	5.0	6.5
Quartz Mountain	5320	2/26	21	6.5	4.1	6.3
Sherman Valley ^e	6600	2/22	34	11.0	6.6	--
Silver Creek	4900	2/25	7	2.6	2.8	3.7
State Line ^e	5750	2/22	25	8.1	6.3	--
Strawberry ^e	5600	2/21	18	5.8	3.6	9.9
Summer Rim	7200	2/24	33	9.7	9.1	14.8
Sycan Flat ^e	5500	2/21	22	7.1	3.6	--

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) 1943 and 1945 excepted. (h) Dec. 1, 1959.

LAKE COUNTY, GOOSE LAKE WATERSHEDS

A horizontal scale bar with tick marks at 0, 10, 20, and 30. Below the scale bar, the text "SCALE IN MILES" is centered.



LEGEND

The legend consists of seven entries, each with a small icon followed by a line and a text label:

- Watershed Boundary: A thick black line.
- Sub-watershed Boundary: A thin black line.
- Soil Conservation District Bdry.: A thin grey line.
- County Boundary: A thick black line.
- Forecast Point: A blue triangle icon.
- Snow Course: A red circle icon.
- Aerial Snow Depth Gage: A red arrow icon pointing upwards.
- COPCO Snow Station: A red circle icon.

WATER SUPPLY OUTLOOK HARNEY BASIN WATERSHEDS OREGON

as of
MARCH 1, 1960

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

GENERAL OUTLOOK

The water supply outlook for the 1960 irrigation season in Harney Basin, although improved slightly by February storms, is still only "fair". Snow cover has improved but streamflow forecasts are only 47 to 75 percent of normal flow for the irrigation season, April through September.

SNOW COVER

Snow cover has increased from 71 percent of normal last month to 85 percent for March 1 and is 33 percent more than last year at this time.

On a normal year, 95 percent of the year's total snowpack is on the ground by March 1. This year about 71 percent has accumulated to date.

This year, snow has fallen at lower elevations where there was little or none last year at this time.

SOIL MOISTURE

Soils of basin received some much needed moisture during last month where the surface was not frozen. Lower elevation soils are partially primed to a depth of about 18 inches but remain very dry below this level and will reduce the runoff considerably.

STREAMFLOW

Streamflow forecasts in the basin vary from 47 percent of normal (1943-57) on the Silvies River to 75 percent on the Donner und Blitzen. Trout Creek is expected to flow about 6,000 acre feet (April-September) or 65 percent of normal.

Irrigators served by small low-elevation streams may expect "fair" early streamflow but tapering off earlier than usual again this season.

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WATER SUPPLY OUTLOOK expressed as "Poor", "Fair", "Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Catlow Valley	Fair	Fair
Cow Creek	Fair	Fair
Donner und Blitzen River	Fair	Fair
Mill-Coffeepot Creeks	Fair	Fair
Rattlesnake Creek	Fair	Fair
Silver Creek	Fair	Poor
Silvies River	Fair	Poor
Soldier-Prather Creek	Fair	Fair
Trout Creek	Fair	Poor
Whitehorse Creek	Fair	Poor

RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	NORMAL b

STREAMFLOW FORECASTS^a (1,000 Ac. Ft.)

NO.	NAME	FORECAST POINT	FORECAST THIS YEAR	FORECAST PERIOD	NORMAL b	THIS YEAR AS PERCENT OF NORMAL
						NO.
953	Donner und Blitzen near Frenchglen		50	April-Sept.	67	75
966	Silvies near Burns		50	April-Sept.	107	47
974	Trout near Denio		6.0	April-Sept.	9.2	65

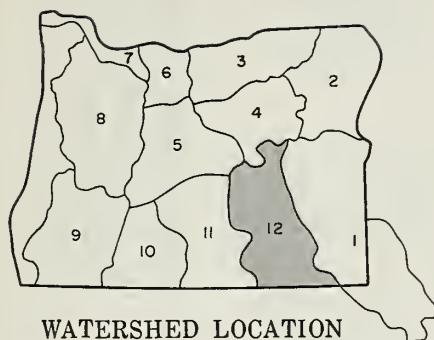
SNOW

SNOW COURSE	CURRENT INFORMATION			PAST RECORD			
	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)	YEARS IN NORMAL b
					LAST YEAR	NORMAL b	
Blue Mountain Springs	5900	2/25	47	12.8	8.6	15.2	15
Call Meadow ^e	5340	2/27	21	5.9	5.4	--	0
Delintment Lake	5600	g					
Denio Creek ^e	6000	2/22	3	0.8	0.6	--	0
Disaster Peak	6500	2/28	29	9.2	15.6	15.7	9
Emigrant Butte	5000	g					
Fish Creek ^e	7900	2/22	46	12.9	15.4	--	0
Hart Mountain ^e	6350	2/23	10	3.2	--	--	0
Idlewild Camp	5200	2/24	20	5.5	1.6	5.7	15
Izee Summit	5293	2/24	25	6.8	4.4	8.1	15
Lake Creek	5120	2/25	35	9.2	6.7	10.7	15
Oregon Canyon ^e	7240	2/27	27	7.6	4.2	--	0
Riddle Creek ^e	5300	2/22	12	3.4	0.9	--	0
Rock Spring	5100	2/24	24	6.7	3.2	5.9	15
Silvies ^e	6900	2/22	27	7.6	6.0	--	0
Snow Mountain	6300	c					
Starr Ridge	5156	2/24	21	5.7	2.9	6.0	15
Stinking Water	4800	2/26	14	5.2	T	4.2	12
Trout Creek ^e	7800	2/22	20	5.6	3.0	--	0
"V" Lake ^e	6600	2/22	20	5.6	1.8	--	0

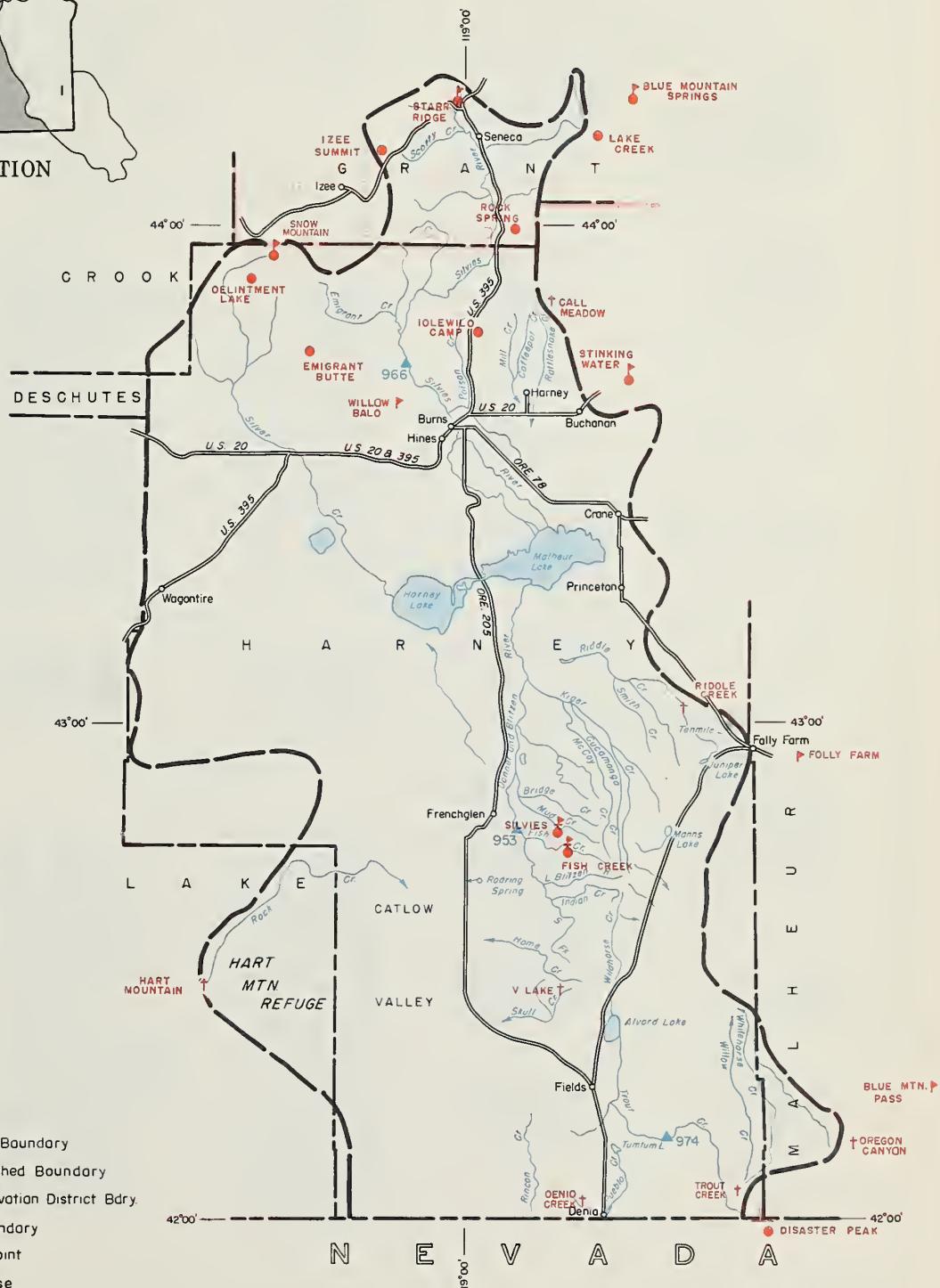
(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) Not surveyed.

HARNEY BASIN WATERSHEDS

10 0 10 20 30
SCALE IN MILES

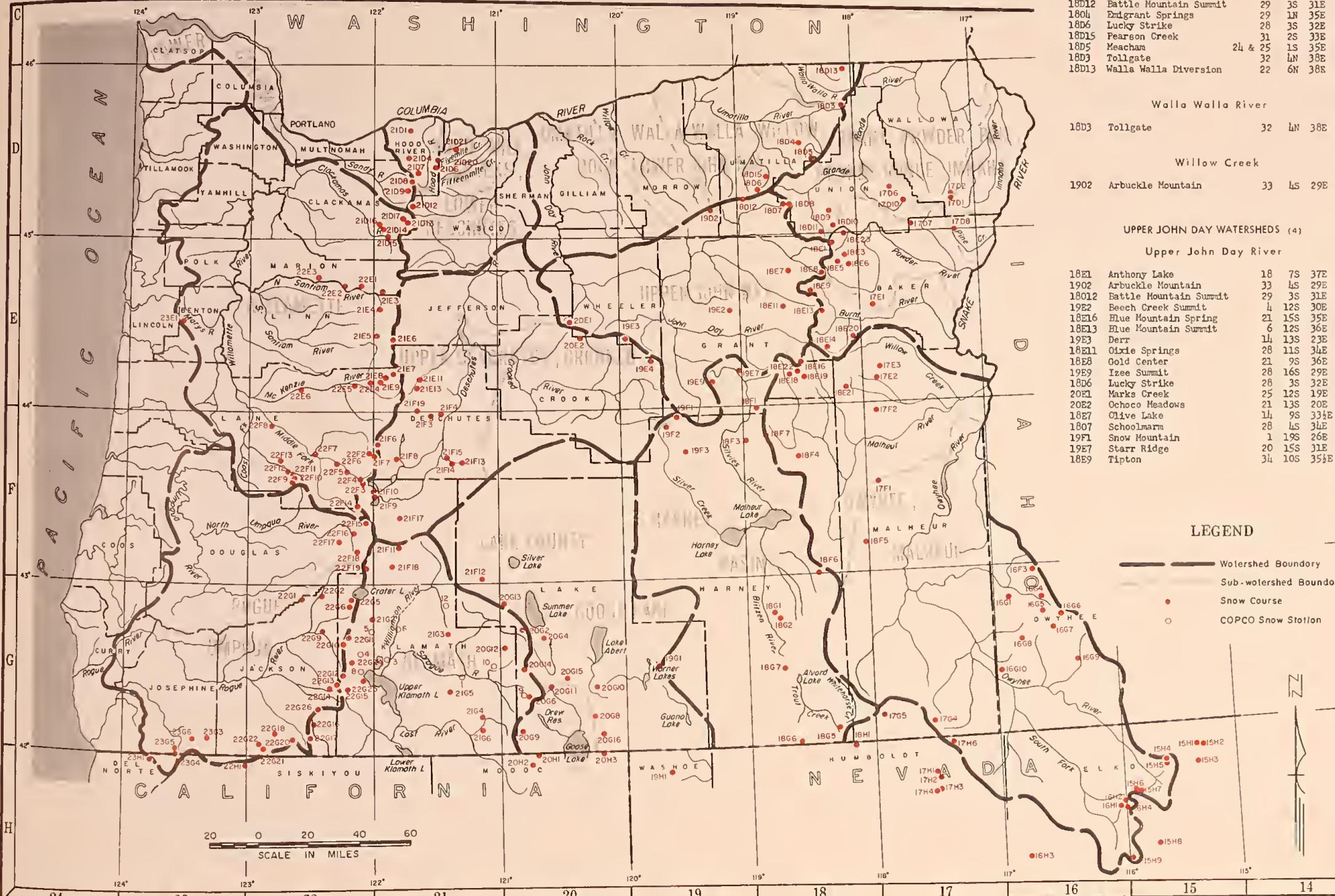


WATERSHED LOCATION

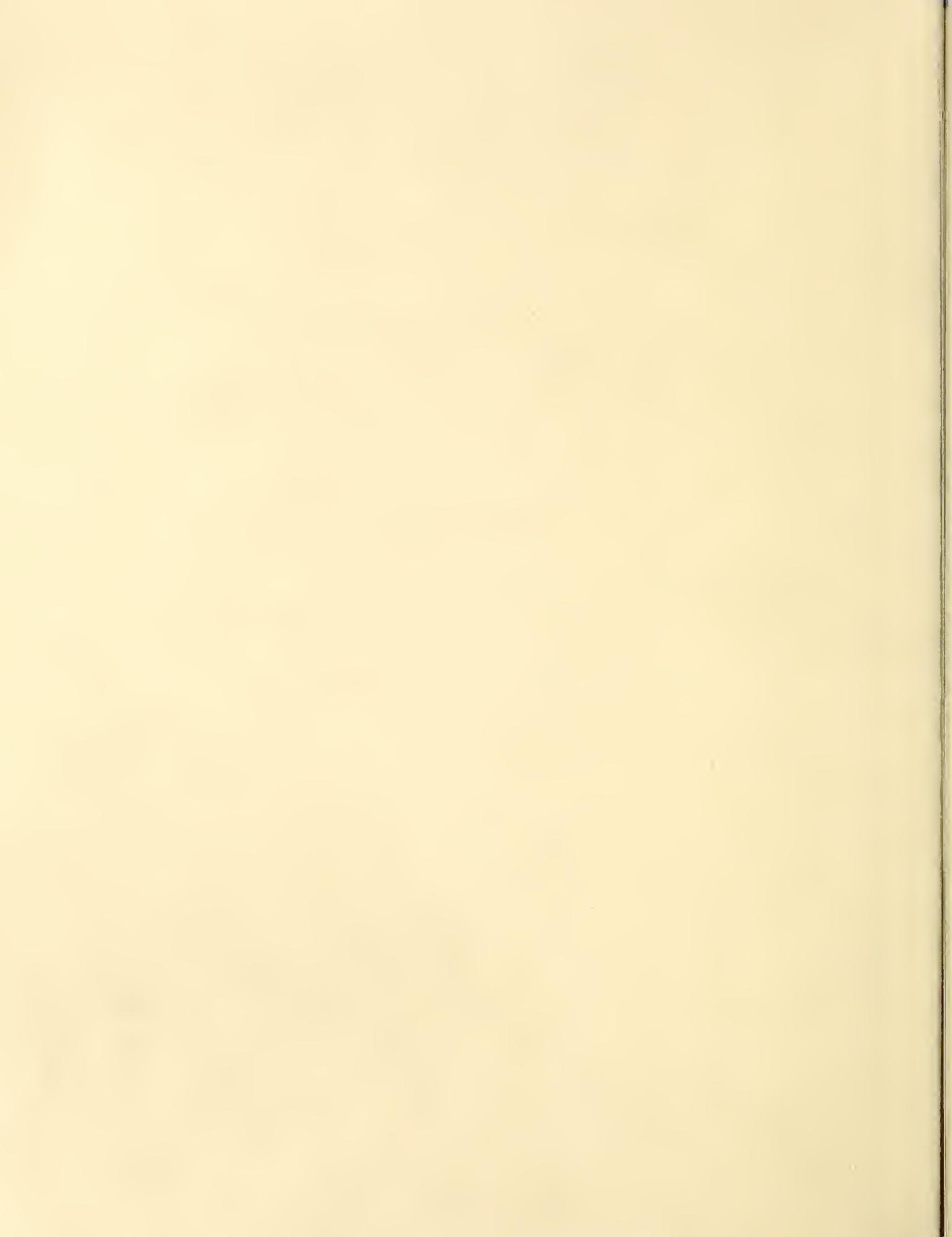


LEGEND

- Watershed Boundary
- Sub-watershed Boundary
- Soil Conservation District Bdry
- County Boundary
- ▲ Forecast Point
- Snow Course
- † Aerial Snow Depth Gage
- Soil Moisture Station



MAP and INDEX to
OREGON SNOW COURSES



The Following Organizations Cooperate in the Oregon Snow Survey Work

STATE

Idaho Cooperative Snow Surveys
Nevada Cooperative Snow Surveys
Oregon Agricultural Experiment Station
Oregon State Engineer and Corps of State Watermasters
Oregon State Highway Engineers
Soil Conservation Districts of Oregon

FEDERAL

Department of Agriculture
Cooperative Extension Service
Forest Service
Soil Conservation Service
Department of Commerce
Weather Bureau
Department of the Interior
Bonneville Power Administration
Bureau of Land Management
Bureau of Reclamation
Fish and Wildlife Service
Geological Survey
Indian Service
National Park Service
Department of National Defense
Corps of Army Engineers

PUBLIC UTILITIES

California-Pacific Utilities Company
Pacific Power and Light Company
Portland General Electric Company
The California Oregon Power Company

MUNICIPALITIES

City of Baker
City of La Grande
City of The Dalles
City of Walla Walla

IRRIGATION DISTRICTS

Associated Ditch Companies
Central Oregon Irrigation District
Deschutes County Municipal Improvement District
East Fork Irrigation District
Grants Pass Irrigation District
Jordan Valley Irrigation District
Lakeview Water Users, Incorporated
Medford Irrigation District
North Board of Control - Owyhee Project
North Unit Irrigation District
Ochoco Irrigation District
Rogue River Valley Irrigation District
South Board of Control - Owyhee Project
Talent Irrigation District
Vale-Oregon Irrigation District
Warmsprings Irrigation District

PRIVATE ORGANIZATIONS

Amalgamated Sugar Company
The Crag Rats, Hood River, Oregon

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
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*"The Conservation of Water begins
with the Snow Survey"*